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AMERICAN ARTISAN and Hardware Record

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The Best Cooks want the Best Cooking Utensils



AND good cooks and good cooking are coming back again. Right now in the cold weather when housewives most enjoy doing their cooking you should bring the merits of Agate Nickel-Steel Ware to their attention.

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Chicago, Illinois

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Boston



Burnt in the
enamel on
each piece



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FOR BURNING SOFT COAL SMOKELESSLY

SUPER-SMOKELESS Furnaces are now heating thousands of homes with soft coal—WITHOUT SMOKE. Their remarkably clean operation astonishes and delights every heater man and home owner. The smoke and soot are actually consumed as fuel and definite reductions in coal requirements invariably obtained.

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Thoroughly Covers
the
Warm Air Furnace
Sheet Metal, Stove
and
Hardware Interests

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M.W.

Making a Million Mothers Happier

WOMEN run the greatest business on earth—the Home. All Industry is organized for the maintenance, protection, comfort, and happiness of the Home. It is, therefore, the duty of Man to provide for the Home as many and as efficient labor-saving appliances as he possibly can.

The kitchen is the heart of the Home. It is Woman's Workshop. In it she performs her hardest and most disagreeable work. So, there exists a tremendous market for meritorious equipment that makes cooking an easier, quicker, cleaner, cooler task.

If you want to tap this profitable market in 1924 we recommend that you sell Oil Cook Stoves equipped with the Lorain High Speed Burner. It's a wonderful burner—simple in construction, easy to operate, durable, economical, and highly efficient.

In addition, the Lorain High Speed Burner has back of it an advertising campaign of unusual proportions and effectiveness—a campaign that, being sponsored by an organization known for several decades as pioneers in the improvement of cooking appliances, leaves nothing to be desired.

AMERICAN STOVE COMPANY, ST. LOUIS, MO.

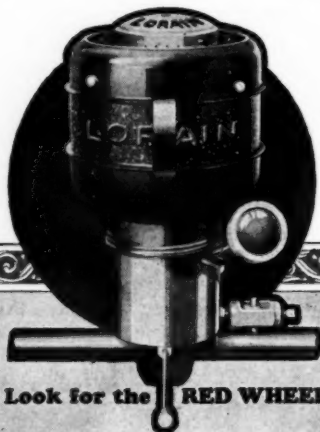
Many famous makes of Oil Cook Stoves are equipped with Lorain High Speed Oil Burners including:

CLARK JEWEL

George M. Clark & Co. Div., Chicago, Ill.

DANGLER

Dangler Stove Co. Div., Cleveland, Ohio



Look for the **RED WHEEL**

DIRECT ACTION

National Stove Co. Div., Lorain, Ohio

NEW PROCESS

New Process Stove Co. Div., Cleveland, Ohio

QUICK MEAL

Quick Meal Stove Co. Div., St. Louis, Mo.

LORAIN HIGH SPEED OIL BURNER

WHAT DID YOU LEARN FROM 1923 THAT YOU CAN USE IN 1924?

At this time of year every good business man has either completed or has his inventory under way.

Just ordinary common sense requires that a man who is "in business" should take stock of his resources and liabilities, in order to know definitely his financial status.

And in this January of 1924, that inventory ought to show that 1923 was a prosperous year; that more than the average amount of sales was made; that a fair net profit was realized after all expenses had been paid; that the stock of merchandise now on hand is in good "turn-over" condition; that "accounts receivable" are no higher than for a good average year; that "bills payable" are at a low point.

There will, however, be those with whom all of these statements do not hold good. There will be cases where sales were not so good, where the net profit was less than it should have been; where the "carried over" stock of strictly seasonable goods was too large; where charge accounts show too large a total; where the amount owed to supply houses is too large.

But whether you belong in one or the other class, it is important that, after your inventory has been completed and reduced to its final, you give careful study to its various elements.

You may find, for example, that your stock of tools only turned one-and-a-half times; or that there was a certain number of charge customers whose accounts were always far from being cleaned up; or that your stock of housewares failed to show a fair return for the investment.

It may not be wise to cut down a line just because its turnover is low. Probably a bit of extra "pep" put behind it will boost the sales without increasing the stock materially.

It may not be good policy to cut off credit altogether from "slow pay" customers; most likely a plain, heart-to-heart talk with them will fix the matter.

Maybe you haven't given the housewares department a fair show; if so, boost it with special window and interior displays and with extra space in your advertising.

And if you have been slow in paying your

own bills, make this resolution—and stick to it against all circumstances—that from now on it is going to be a case of prompt pay with all the discounts off that you are entitled to.

And when that salesman of that troublesome house calls, tell him your orders must receive prompt and careful attention.

But there are other things that you should find in your inventory:

What are your relations with your employees—with the people in your trading territory?

Do your employees look upon you in the light of a man who has to be driven to pay them what they are worth, or do they regard you as a man to whom they can come in full confidence with their troubles and who will always give them a square deal?

Is there need for some rectifying in that factor of your business?

And what about the people from whom your profits must come?

Do they look upon you as a man of ability, as a man of integrity, as a man whose merchandise and service is not only dependable, but dispensed in a manner that is pleasing and at a fair price?

Is there something that ought to be adjusted in that department?

January may be considered a dull month by some people, but the man who looks upon his business as something more than a means of getting a more or less comfortable living, will have plenty to do, in order to make certain—so far as human intelligence and mental and physical effort can make it so—that 1924 will show progress in his standing as a useful member of what we call society.

As to business prospects for 1924?

That depends to such a large extent upon the individual himself that we shall content ourselves with the statement that 1924 will be a good year for the man who goes after business in an intelligent manner, with well planned sales and advertising campaigns, carried on steadily through the year—provided that his personal reputation is such that his statements will carry full weight.

Random Notes and Sketches.

By Sidney Arnold

On behalf of the "boys and girls" of AMERICAN ARTISAN, I am certainly pleased to write this small announcement of our appreciation of the many greetings and good wishes for the New Year. When our work brings forth such letters and in such large number as were received during the past two weeks, there is added another inducement for us to do even better work during 1924, and all of our friends may rest assured that every one connected with this publication will be "on his or her toes" to make AMERICAN ARTISAN of still greater service during the coming year.

* * *

And that is not the last of the story, for some one took it upon himself to send a copy of the "Magic Chef" to Hollinsworth M. Taylor, President of the N & G. Taylor Company (Mr. Hallgath's boss) and here is what I received from him:

"All of which reminds me of another little story:

"A small colored boy studying his lessons happened to run across the word 'Millennium' and turning to his father asked, 'Pop, what's a millennium?' to which his parent replied, 'Well, it's something like a centennial, only it's got more legs.'"

Now you advertising men, see if you can twist that into something that you can use.

Incidentally, Mr. Taylor ought to be able to explain what a centennial is, for he is Chairman of the Committee on Aviation for the coming Sesqui-Centennial in Philadelphia in 1926 and also on the Committee on Manufacturers. (What's a "sesqui" anyway?)

Mr. Taylor also tells me that he always takes AMERICAN ARTISAN home for careful reading, and that he is indebted to me for many anecdotes, which shows that he is a good judge of what to read—for entertainment and profit.

These advertising men are the bane of my life. You never know when they will catch you upon some "perfectly" innocent remark and make use of it for their own selfish purpose.

Some time ago I told a "perfectly" true story in this column about C. H. Hallgath, Western Salesmanager for the "Target and Arrow" tin plate folks.

The story had a "perfectly" good point to it, but along comes that fellow Thomas Rath, who has charge of the American Stove Company campaign on Loraine-equipped gas ranges and induces George F. Fiske, the dignified Treasurer of the same company, to tack an entirely different idea—something about his old stove—on to it, which he publishes in his house organ, the "Magic Chef."

The application is all right, of course, or Mr. Fiske would not have made it, but it only goes to show what these advertising men will do to induce people to read their stuff.

* * *

A. W. Glessner, the Excelsior furnace man, took a trip with Mrs. Glessner last winter. One evening on the home stretch there was a group in the steamer salon reciting stories of adventure—true every one of them, of course. One man insisted on the floor most of the time, but was finally squelched by "A. W." in the following manner:

"When I was in India," said the bore, "I saw a tiger come down to the water where some women were washing clothes. It was a very fierce tiger, but one woman, with great presence of mind, splashed some water in its face—and it slunk away."

"Gentlemen," said Mr. Glessner, "I can vouch for the truth of this story. Some minutes after the incident occurred I was coming down

to the water. I met this tiger, and, as is my habit, stroked its whiskers. Gentlemen, those whiskers were wet."

* * *

R. J. Schwab was down in Florida last winter and he still has a few stories to tell about what he saw and heard, that have not been told. Here is one of them:

Driving along one of the highways in western North Carolina he came upon a number of natives playing baseball. Bringing his machine to a stop he called to an old codger who was looknig on with enthusiasm:

"I say, Dad, what's the score?"

The old man snatched his eyes away from the game only long enough to announce proudly:

"Ary one and nary one, in favor of we uns."

* * *

"Asking the momentous question may not be a very difficult matter with some young ladies that I know," said John C. Newman, the old-time, but still young sheet metal contractor in Springfield, Illinois, "but when it comes to finding out from the old man it is another proposition as in 'Freddie's' case.

"O-o-o-o-o, Freddie!" exclaimed the girl as her private sheik, much bandaged and court-plastered, met her in the park, per agreement. 'Did papa do all that to you when you asked him for my hand?'

"Not on your life!" replied Freddie proudly. 'He never touched me. I jumped through a window.'

* * *

"Talking about the man who was so stingy that he used the wart on the back of his neck for a collar button," said "Pete" Johnson, of the Champion furnace pipe outfit, "here is one that has it beat a mile:

"A farmer boy and his best girl were seated in a buggy one evening in town watching the people pass. Near by was a popcorn vender's stand. Presently the lady remarked: 'My! that popcorn smells good!'

"That's right," said the gallant, 'I'll drive up a little closer so you can smell it better.'"

British Heating-Ventilating Engineer Discusses Fundamental Principles of Ventilation.

P. J. Waldram Goes Into Details as to Natural and Mechanical Ventilation and Requirements for Same.

THE following paper on "Ventilation of Buildings" was read recently by P. J. Waldram before the Junior Institution of Engineers, a body of British heating and ventilating engineers and will be read with considerable interest and benefit:

The Ventilation of Buildings.

To urge upon engineers the necessity and the monetary advantage of securing for factory operatives the best possible conditions of ventilation is to preach to the converted. But, like all engineering problems, ideal conditions are expensive, and in some ways antagonistic to other desiderata scarcely less important. All that can be achieved in the majority of cases is a reasonable compromise, and this cannot be achieved until we know the difference between what is essential and what is merely desirable, and what is of real value to health as distinct from those conditions which are popularly supposed to be beneficial.

The object of this paper is to bring out, as far as possible, the really essential facts.

The Principles of Ventilation.

Upon the subject of ventilation there is as much difference as upon the subject of food; established authorities differ considerably; but these differences will be found, upon examination, to be due to increase of knowledge and research. Ordinary people partially informed, differ still more, but this can readily be traced to the variations between the bodily machinery of different people, or can be attributed to ordinary human prejudice, which the wise man recognizes, studies, and learns from, but by which he is not deceived. We know that there are fresh air cranks who seek to impose on all and sundry, in season and out of season, those drastic conditions by which healthy and vigorous bodies benefit. There are, on

the other hand, people who squeal with terror at an open door or window; possibly with reason if they happen to be bronchitic or anæmic, but far more often because they like lazy warmth. They fail to realize that the transient comfort of stagnant warmth is due to the artificiality of our town-bred life, and that the reactions which come from increased activity, induced by more natural conditions, are not only far less dangerous and much healthier in the long run, but are also more pleasurable in the near future.

It is not the child who crouches over the fire on a snowy day who glows with healthy warmth, it is the youngster who runs out and throws icy cold snow-balls with his bare hands. It is not the driver and the stoker on the footplate of an express train who catch colds and chills; it is the passengers confined in the stagnant, overheated air of the stuffy carriages.

The sentence that "man must earn his bread by the sweat of his brow" was a Divine curse, and as such it was beneficial, for Nature works through processes which seem to us to be curiously inverted, but they are extremely efficient. We grow strong by wearing away our tissues by exercise, which creates the need for their replacement by increased consumption of food, and the desire for that food comes spontaneously. Colloquially, we take exercise to get up an appetite. The wind blows upon as much of our skin as we dare to expose to it. If our bodies are healthy this causes a healthy reaction. Mothers in Russia do not give their babies hot baths before a fire; the cold is too severe for that, so they roll them in the snow instead. Enough to make anyone a Bolshevik you say. But no—warmth from reaction is Nature's warmth, and is far healthier than that caused by standing or

sitting before a fire. This is, of course, an extreme example of Nature's system of reactions, but in life every form is nothing more than a series of reactions. Nature applies the motives, and the bodily machines work. Reduce the motives artificially and the vitality invariably dies down. Our bodies are not built for lives of monotonous ease, any more than they were intended to reside in an unchanging-temperature of exactly 62 degrees Fahrenheit, with exactly 0.3 per cent of carbon dioxide, and no draughts that the skin can feel. The skin *needs* a flow of air; the body *ought* to be stimulated by changes in temperature, and sunlight is one of its most valuable medicines.

Yet people will live and work largely indoors instead of going out to meet the stimulating reactions of wind, sun and rain, and it is for engineers to determine how much air and sun they need to keep in reasonable health.

At the outset we meet two primary contradictions which make the subject of ventilation so difficult.

First, we must have warm interiors, and warming is expensive, but the conditions which are best economically for warming are least conducive to a sufficiency of air.

Secondly, the air flow and temperature changes which are essential to excite a sufficiency of reaction, and to prevent deterioration in normal bodily machines, are often too drastic for those who are underfed or chronically anæmic or bronchitic, and will always be grumbled at by those who are self-indulgent.

It is therefore necessary to appreciate that if we seek to economize fuel by means of small and closed windows, air-tight walls and stagnant atmosphere, we must pay for it in ill-health and liability to infection, and that although ventilation without draughts is feasible, efficient ventilation without what *somebody* will call draughts is impossible.

Calculated Air Supply.

The action of the lungs in breathing being to absorb oxygen from the air, and to emit air charged with

vapor and carbon dioxide (CO_2), the latter was for many years regarded as the essential poison in emitted air. That idea is nearly but not quite exploded. Carbon dioxide is not essentially poisonous in moderate or even large quantities. It is possible to have air which is comparatively free of CO_2 but which is almost unbearable. It is also possible to have air which is heavily loaded with it and is yet comparatively harmless.

The proportion of CO_2 existing in the air of a room is still taken by many authorities as a measure (although it may be but an imperfect measure) of its impurity, and the calculation of the air changes necessary to keep it down to any desired level is simple. For example, the proportion of CO_2 in the outside air keeps fairly constant at about four parts in 10,000, or 0.0004, or 0.04 per cent, and an average person will produce 0.6 cubic feet of CO_2 per hour. If this figure be called V , the number of persons to be provided for p , the proportion of CO_2 in the outside air N ($= 0.0004$), and the proportion of CO_2 inside, which it is not considered desirable to exceed x , then the hourly air supply

$$A = \frac{Vp}{x - N}$$

For example, suppose it be decided to keep the CO_2 down to 0.08 per cent, or double that of the outside air, then the hourly supply of air per person must be

.06

———— = 1500 cubic feet
.0008 — .0004
for every person in the room.

Table I shows the amount of air required per hour per person, which must be supplied to keep within any given degree of so-called contamination by CO_2 . Its application to any given case, of which a number are

Table I.

Carbon Dioxide Contamination.		
Hourly supply per Person.		
CO_2 per cent	Cu. ft. air per hr.	
0.20	375	
0.16	500	
0.12	750	

0.10	1000
0.09	1200
0.08	1500
0.07	2000
0.06	3000
0.05	6000

Table II.

Cubic Feet per Person.

	Cu. Feet.
Poor Law Infirmaries.....	1000
Army Infirmaries and Barracks	600
Underground Bakehouses	500
Pauper Dormitories	300
Common Lodging - houses	
(sleeping)	300
Sick Bay—Navy.....	250
Navy Mess Deck—average...	150
Average Cinema Theater (Birmingham)	140
Sleeping Deck ("Dreadnought" Class)	86
Sleeping Deck ("Formidable" Class)	68
Military Transport	80

given in Table II, will show at once that not merely draughts but miniature hurricanes would be required to keep down to the 0.06 per cent, 6 parts in 10,000, or 50 per cent above the normal outside air, which many authorities advise. This difficulty has caused many people to disregard efficient ventilation without draughts as a hopeless impossibility. Others have thrown over the CO_2 idea, and suggested that contamination of rooms must come from poisonous emanations of the skin, or be contained in emitted breath. But there is not a shred of reliable evidence that the emanations from the skin of persons who are not suffering from infectious diseases are poisonous. Smell is a warning, not of poison, but of lack of air. As to the danger of emitted breath, why air which has passed through the lungs of healthy persons may be actually less harmful than air which has not.

One of the most important functions of the lungs is to bring into contact with inhaled air the red corpuscles of the blood, who are the sanitary policemen of the body, and wage continuous warfare against harmful and infectious germs; so that emitted air may even have been cleansed by having been breathed

by a healthy person, for these germs are the true source of infectious colds, etc. Draughts cure more colds than they cause.

If then CO_2 , bodily emanations, and emitted breath—the three bogies of the older authorities—must all be ruled out, what then are the noxious elements which render air vitiated and poisonous? They are simply humidity, stagnation, or monotony and over-heating. Air which is either humid or still, or both, will not absorb the moisture which the body is continually desiring to throw off; neither will over-heated air absorb with sufficient rapidity the heat produced.

The normal functions of the body involve the increasing throwing off of heat and moisture, and it will quickly overcharge the air in its immediate vicinity with both. Unless, therefore, the body can move about into fresh regions of air, as the "weary ploughman" does, and as the passenger in a stuffy train does not, or unless it can be supplied with a more or less continuous flow of cool dry air, then the fires of life will not burn properly any more than will a steam boiler furnace with an unduly restricted draught.

The primary condition of good ventilation is therefore the direct antithesis of stagnant humidity and over-heating; viz., sufficiency of moving air, sufficiently dry and cool.

But how is it possible to determine the amount and temperature of the air to be supplied? This has been rendered comparatively simple by an instrument invented by Professor Leonard Hill which is known as the Kata-thermometer. The ordinary thermometer, whether wet bulb or dry bulb, merely tells us the degree of temperature of the air. The Kata-thermometer gives us its cooling properties.

It consists of a glass tube of small internal diameter suitably graduated with enlarged bulbs at the top and bottom. The lower bulb is filled with a red liquid. If this be heated, preferably by being dipped into a thermos flask of hot water, a meniscus of red liquid rises up the tube into the top bulb. Care should be

taken that the latter is not allowed to fill completely, otherwise it may burst.

On removing the tube from the flask and hanging it in the air, of which it is desired to test the cooling properties, known as the "dry-Kata value," the meniscus drops as the liquid cools. The time in seconds taken by the meniscus in dropping from 95 degrees to 90 degrees is noted, and this divided into a calibration number, which is marked on each instrument, gives at once the "dry-Kata value."

If it is desired to ascertain the evaporative capacity of the stream of air, the lower bulb is enclosed in an envelope of Lisle thread, and the same cycle of simple operations gives the "wet-Kata value."

The instrument can also be used similarly as an anemometer.

The simplicity of these tests as compared with, say, an estimation of CO_2 by the Haldane apparatus, is obvious. The application of the results recorded is equally simple.

Air Movement and Temperature.

Any desired degree of cooling and evaporative capacity may obviously be obtained by very cool air moving slowly, or by warmer air moving more quickly. Fortunately, we can stand more powerful draughts with equanimity if they be warmer. This gives a usefully large margin to choose from.

The individual researches of Professor Hill with the Kata-thermometer have enabled Kata values to be formulated for different degrees of bodily activity in terms of air speed and temperature.

The figures in Table III have been issued with the high authority of the Council of Medical Research a department of the Privy Council. They are of greater value than a whole shelf of text-books.

Inlet Sq. In.	Outlet Sq. In.	Speed F.P.M.	Output Cu. Ft./min.	H.P.	Pressure In. water.
6.5	6.5	1175	1200	0.07	8
12.5	12.5	1500	1800	1.17	2
17.7	17.7	2000	3600	1.37	8
24	24	2500	5400	2.1	8
33	33	3000	7200	2.8	8
45	45	3500	9000	3.5	8
60	60	4000	10800	4.2	8
72	72	4500	12600	4.9	8

Table III.

The Home Office issues a useful little handbook on the "Ventilation

of Factories," in which a *minimum* of six changes per hour, well distributed over the room, is recommended.

The dry-Kata value which would result from carrying out this recommendation depends, of course, on the temperature and the dimensions of the room. Air can obviously be renewed at a much lower velocity across a long narrow room than in the direction of its length.

Natural Ventilation.

The means whereby natural ventilation is obtained are well known, and need no description. Suffice it to say that no means of securing an ample supply of fresh, dry, cool air should be neglected, but the ventilating power of small openings is often exaggerated.

Thoroughly flushing out of rooms by opening all doors and windows at intervals, the use of open fires, the keeping of windows shut to windward and open to leeward in windy wet weather, and such like common-sense expedients, are of far more use than a diminutive air inlet valve.

The efficient ventilation of factories by natural means alone is seldom possible, and never reliable, and the assistance of exhaust or plenum fans can seldom be avoided.

Mechanical Ventilation.

The following rules with regard to the delivery of fans apply to ordinary situations. Due allowance must be made for abnormal conditions, such as ducts of insufficient size or unusual length.

Ventilation fans may be divided into:—

(a) Propeller or low resistance type, suitable for situations conducive to an ample supply of air to the inlet side, and low resistance on the delivery side, and generally used for exhaust systems.

(b) Pressure type, suitable for situations where air has to be drawn from and delivered to long trunks offering considerable resistance, as in the typical plenum system.

Speed and Output of Fans—Propeller Type.

The capacity, or output, of a given type of propeller fan rim de-

pends primarily upon its speed, and therefore upon the cube of its wing-tip diameter. Within certain limits of speed its capacity in cubic feet per minute (C) can be determined by the formula $C = kND^3$, in which N = number of revolutions per minute and D = wing-tip diameter in feet. The constant k is a measure of the efficiency of the fan. In the majority of reliable makes its value on test is about 0.6. Some makers claim 0.7, but this figure, if essential to proper working, should be duly guaranteed.

Table IV shows the usual upper and lower limits of speed for different diameters of fan, and the delivery in cubic feet per minute for a value of k of 0.6.

Dia. In.	Speed R.P.M.		Output Cu. Ft./min.		H.P.	
	Min.	Max.	Min.	Max.	Min.	Max.
12	1200	2100	700	1200	.083	.100
15	1050	1800	1200	1970	.095	.105
18	900	1500	1700	2520	.095	.105
20	780	1350	2110	2970	.095	.105
24	650	1050	3000	3600	.095	.105
28	510	850	3510	4510	.095	.105
30	450	750	4700	5970	.095	.105
36	375	600	6800	8580	.095	.105
40	330	525	8800	11000	.095	.105
48	270	420	12700	15800	.095	.105
54	225	350	16600	20600	.095	.105
60	195	300	20500	25500	.095	.105

Table IV.

As an example of the use of this table, assume a room 120 ft. long by 25 ft. wide by 12 ft. high, the air of which it is required to change six times per hour by propeller fans.

The quantity of air to be moved will be

$$120 \times 25 \times 12 \times 6 = 3600 \text{ cu. ft.}$$

60

per minute.

Table IV shows at once that one 24 in. fan at a speed of

3600

$$630 \times \frac{3600}{3020} = 750 \text{ r.p.m.}$$

3020

would do the work, but in such a long and comparatively narrow room three 15 in. fans at a speed of about 1,000 r.p.m. would be preferable.

Propeller fans will only work well against very low resistance, say $\frac{1}{4}$ in. or $\frac{3}{8}$ in. water pressure. If set to work against serious back or forward pressure, especially the latter, they expend the greater part of their power in setting up eddies round the fan, taking in air at the tips, but allowing it to flow back

again at the centre under the pressure difference. They should be well screened from wind, and the annular clearance between the wing tip and the frames should be as small as possible. Wind screens or hopper intakes should be ample in size. Surfaces facing the fan should be distant by at least the fan diameter.

Power Required by Propeller Fans.

Walker's formula for the h.p. required by a propeller fan for a given output (Q) in feet per second for fans of a diameter D in feet is

$$H = 0.0000115 \frac{Q^3}{D^4}$$

The results given by this formula are also given in Table IV.

A large number of fans run at a moderate speed give a more equable air movement than a smaller number run at a high speed, and the reduction in power generally permits economically of the higher first cost of the installation. It should always be borne in mind that it does not pay to run a fan of a given diameter at less than its lower efficient limit of speed.

Inlets and Inlet Velocity.

Propeller fans are generally installed as extractors. If they are fixed at a low level the inlets should be 8 to 10 ft. above the floor. If they are fixed at a high level the fresh air inlets should be at a height of 3 feet 6 inches to 4 feet.

The inlets should be widely distributed to obtain the maximum "scavenging effect." An air velocity of much in excess of 250 feet per minute, whether warmed or not, will produce uncomfortable draughts in the vicinity of inlets unless they are well above the workers' heads. To avoid this the minimum total inlet area generally needs to be about three times the total disc area of the extraction fans for moderate speeds, and more for higher speeds.

No room is quite air-tight, and the air sucked in by the fans will not enter exclusively by the inlets provided. A calculated velocity through the latter of as much as 300 feet per minute may, for this

reason, prove to be below 250 feet in actual working.

Power Fans.

Exhaust fans with propeller type fans are not suitable for large shops, basements, or in situations where the fans are necessarily at a considerable distance from the air inlets, nor for situations which require that large volumes of cold air should be delivered to operatives working in high temperatures, as in glass works. In these a plenum system is usually installed in which air is driven at the inlet among the mains and branch air ducts by fans, which are capable of working against the pressure necessary to overcome the friction of the ducts.

The latter depends so much upon the size and construction of the duct, and the skill of the designer in easing the air flow round changes in direction, branches, etc., that the calculation of the air pressure against which the fan is to work is apt to be deceptive. As a general rule, if the cross section of the main trunk at the fan end be made at least equal to the total cross section of all the branches, plus 20 per cent, and gradually tapered, that of the branches at least equal to the disc area and all changes of direction carefully faired, the pressure against which the fan will be required to work will be well below the three inches of water pressure, against which most ventilating pressure fans are guaranteed to work. If the designer estimates for $2\frac{1}{2}$ in./ $2\frac{1}{4}$ in. water pressure, and makes provision for varying the fan speed according to anemometer tests of the installation, the result will probably be more satisfactory than if he makes a hard and fast estimate of the air pressure. It is for this reason that electrically-driven fans, coupled direct to motors, are apt to be rather more rigid in their performance than is always desirable. If on test it is found possible to obtain the required output with a reduced speed, the saving on running costs is considerable, for the power consumed will be reduced in the proportion of something more than the cube of the speeds.

Output of Pressure Type Fans.

The output of pressure type fans cannot be stated in a simple formula as is the case with fans of the propeller type, for any alteration of speed immediately alters the pressure set up.

For a constant resistance it is found that:—

- (a) Discharge varies as the speed.
- (b) Pressure varies as the cube of the speed.
- (c) B.H.P. required as the cube of the speed.

From these relations it is obvious that for any given output required, slow running fans with large ducts are much more economical in running than high-speed fans with small ducts.

Warmed Air Supplies.

The warming of incoming air will seldom be found sufficient to keep interiors warmed up to the desired temperature, and such warming is usually affected by a part only of the general heating installation. Care should be taken that the radiators or steam coils do not unduly restrict the flow of incoming air.

Air-heating units should be placed above, or level with, the inlets. If placed below there is danger of the inlet acting wholly or partially as an outlet for warmed air.

(To Be Continued.)

Eil Byrum Joins Force of Colburn Heater Company.

Eli Byrum, who for many years has been in the sheet metal and furnace business in Canton, Illinois, has been appointed salesman for Illinois for the Colburn Heater Company, Marshalltown, Iowa.

He has been Secretary of the Sheet Metal Contractors' Association at Canton for several years. Owing to his attendance at most all his state and national conventions, he is not a total stranger to the heating fraternity.

Mr. Byrum started at the trade in 1897, and he still conducts the business at Canton that he started in 1905. He claims that he is still a young man, notwithstanding the fact that the fumes from muriatic acid have turned his hair gray.

Thompson Agrees with Turton That Many Houses Can Be Heated Well with Pipeless.

But He Also Indicates That the Placing of the Register Is of Utmost Importance.

OPEN-MINDED discussion is always helpful, provided those who take part know what they are talking about.

We have had a number of letters about a pipeless furnace job that did not give satisfaction, the plan being shown in the accompanying illustration, and here is another communication, from C. L. Thompson, Sycamore, Illinois:

EDITOR'S NOTE.—Mr. Thompson is mistaken in his surmise that any of these problems are published merely for the purpose of creating discussion. They are all bona fide, but we are always glad to publish them because they do bring out discussion through which better knowledge of the warm air heating business is gained by everyone who reads them.

TO AMERICAN ARTISAN:

Gentlemen: For several years I have read, *with much interest*, the discussions carried on through the columns of the AMERICAN ARTISAN regarding pipeless furnaces. But, heretofore, have refrained from entering into any of the discussions, as there are so many variations in the different types of houses that every heating man must, more or less, work out his own salvation. And I have often thought that many of these sketches were simply inserted to arouse argument. Because—like the accompanying sketch, which originally appeared in the October 20th issue—seldom give sufficient information; such as height of ceiling, height and width of doors, where doors are hung and where only openings are used, arrangement of basement, etc., to enable any one to offer intelligent suggestions.

However, as Mr. Turton, in the last issue of AMERICAN ARTISAN, sends out an S. O. S. for more light, the following is a "flicker," any or all of which you are at liberty

to use as you see fit if you think it will help any brother "do his sums."

In years gone by, the general belief among warm air furnace men was that only a pipe furnace would heat a building—a warm air pipe to every room, taking, perhaps, about

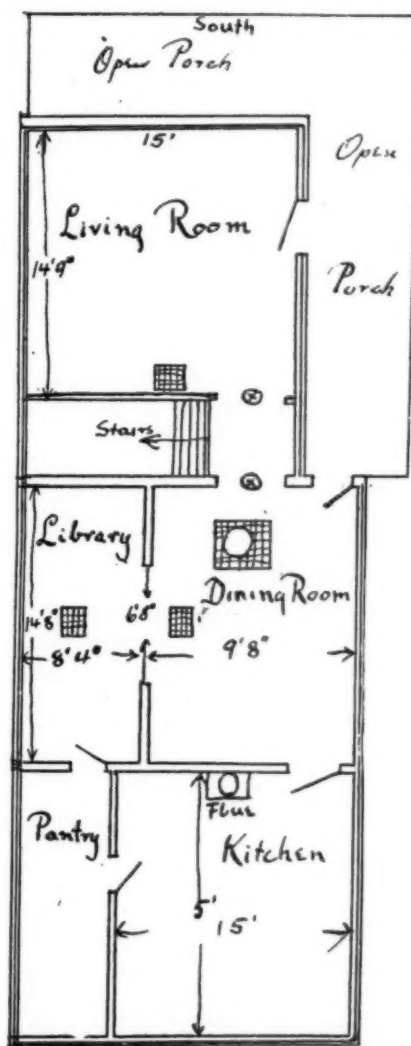
ity have been unable to keep pace with them. It might surprise many of them, as well as our friend "45," to know that there is a fairly successful heating man in the state of Illinois who has installed over one hundred heating plants—every one, to my knowledge, working successfully—who uses but one large warm air register directly above the furnace, centrally located in the house, but takes a return cold air pipe from every room.

Today, I believe it is the general opinion of practical heating men that it is just as essential to get the cold air back to the furnace, and in sufficient volume, as it is to get the warm air away. Having for several years entertained similar views as Mr. Turton—that what we all most desire in any heating plant is "efficiency and comfort with economy"—and sincerely believing that in many houses this can best be accomplished with a pipeless furnace, it is only natural that I have seen a few installed—*successfully*.

For the information of Mr. Turton, Mr. Landwehr, "Subscriber," "Warm Friend," and all others who crave argument, I wish to say that I personally know of two installations that were made in houses similar to the one in the sketch, something like four years ago—20 inch pipeless furnaces being used—which are today heating the buildings successfully, comfortably and economically.

In one house there are no doors hung on either side of the hall; at X 4 by 7 foot doorways, 9 foot ceilings; but a door at the foot of the stairs. The pipeless register was placed in the hallway. By opening and closing the stair door, the temperature of the upstairs is regulated as desired.

In the other house there are doors into the hall at X, but none at the stairs. The house owner was willing to leave the door between the dining room and hall open. The furnace was installed in this doorway—one-third of the register in the hall, and two-thirds in the dining room. A 10 inch booster pipe was run to the living room.



First Floor Arrangement of House for Which a Pipeless Furnace Plan Is Sought.

one-half as much cold air return back to the furnace, and getting this air from any part of the house that was most convenient to the installer—and the other half usually from the outside.

Times and methods have changed since then. And apparently so fast that many of the warm air fratern-

If I was called upon to make a location of a pipeless furnace in this house—where the house owner wished the building uniformly heated and also to keep both hall doors closed, I would place the pipeless register in the dining room, near the door leading into the hall; run a 10 inch booster pipe to a register in the living room; use a 12 by 32 inch Rock Island, Adjustable Side Wall Ventilator above the door between the dining room and hall; and be sure that there was at least a 1½ inch clearance beneath both hall doors to allow cold air return.

If we are allowed to gamble through these columns I'll bet any man a pipeless against a pipe furnace that the above installation will heat this house to as even a temperature as any pipe job he can install (Size 45, or otherwise), and do it with two ton less coal every winter.

Sincerely,

C. L. THOMPSON.

459 East State Street, Sycamore, Illinois.

Kruse Company, Indianapolis, Welded Steel Furnace Pamphlet Has Valuable Information.

Embodied in a 5½x10-inch 18-page pamphlet of a good quality paper, the Kruse Company, Indianapolis, represented by the Carr Supply Company, Chicago distributors, is now mailing the latest information on Kruse Welded Steel Warm Air Furnaces.

Although not actually treatises in the strictest sense of a definition of the word, the explanations and illustrations contained in the pamphlet are so explicit and simple that the reader requires not more than a glance to get the idea.

Special emphasis is placed upon the Kruse method of welding, which they say, insures the furnace to be free from gas and smoke leakage.

The radiators, domes, grates and ash pans are all illustrated and described in entirety.

Kruse Furnace Battery and single installations are illustrated, and all warm air pipes leading from the

furnaces marked, while the Kruse Unit System and the Kruse Blower System are also given prominence in the pamphlet.

Capacities and dimensions of the Welded Steel Furnaces are found on a back page of the booklet.

Valuable Register Standardization Circular Issued by Tuttle & Bailey.

The Tuttle & Bailey Manufacturing Company, Chicago and New York, have prepared a delightful little circular on Register Standardization which will be mailed to jobbers and trade in the near future.

The circular is 3½ by 6 inches and contains fourteen pages, exclusive of the covers. The reader is introduced to the subject of registers rather humorously as follows:

"By the Jumping John Rogers, you are dead right.

"There has been so much 'holler-ing' down the rain barrel, about the standardization of registers, that the barrel is all full of 'hollers,' and there isn't any rain.

"What good is a rain barrel with no rain in it?"

The remaining pages are taken up with discourse on registers and the various sizes of styles of registers recommended by the Committee on Standardization. Numerous diagrams are also interspersed throughout the circular.

The back cover gives list prices of floor registers of the popular stock sizes.

Waterloo Register Company Places New Register With Several Distinctive Features.

The Waterloo Register Company, Waterloo, Iowa, has placed a new line of steel baseboard registers on the market, under the name of the "Standard," as they are made in sizes to conform with the Standard Code and will fit all standard stack heads.

These registers are made with detachable face, secured by two screws which will enable the mechanic to turn the edges of the box between

the frame and the face if he so desires. The shutters are made of polished steel, finished the same as the register, and may be opened to any desired capacity. When opened there is very little air resistance, and when closed the register has a beautiful panel effect. They come in all standard finishes.

Installers and jobbers of warm air furnace supplies are invited to write for descriptive pamphlet and price list.

Henry Furnace & Foundry, Cleveland, to Move Manufacturing Plant.

The Henry Furnace & Foundry Company will move its manufacturing plant from 825 Long Avenue, N. W., Cleveland, to the former plant of the Folding Box Company, East Forty-ninth Street and the Wheeling & Lake Erie Railroad.

Indiana Foundry Men Will Meet at Purdue University, Lafayette, January 17 and 18.

The Engineering Extension Service, Purdue University, Lafayette, Indiana, has made arrangements for the Second Annual Conference of Indiana Foundrymen to be held at the university, January 17 and 18.

W. A. Knapp, Assistant Director Engineering Extension Service, makes this announcement.

Overcoming Difficulties Makes Every Man Stronger.

Man's power and ability seem to grow and expand in proportion to the struggle he makes with difficulties, to the size of the obstacles he overcomes. Without the struggle to overcome there would be no growth. We never quite come to ourselves, never discover the larger man or woman and realize our fulness of power, until we are confronted by some mighty problem, some seemingly unsurmountable obstacle, which taxes all our resources.

Some men succeed when all conditions are favorable. Some men succeed anyway. It's in the man.

Milwaukee Corrugating Company Establishes Branch Plant at La Crosse, Wisconsin.

This Will Add Approximately 150,000 Square Feet of Floor Space to Company's Facilities.

THE purchase of several factory buildings and the establishment of a branch plant at La Crosse, Wisconsin, marks another important advance in the progress of the Milwaukee Corrugating Company, manufacturers of Milcor sheet metal products.

The strategic position of these new Milcor factories will be an important factor in maintaining the Company's policy of "same day" shipments on all its standard lines.

Three of the buildings of the Gund Brewing Company, La Crosse, and the property on which they stand, were included in this purchase and the Milcor Branch will be in operation there by March 1st, 1924. What was formerly the main bottling plant of the Gund brewery and two other smaller buildings, will be remodeled for the new work.

"This branch plant is ideal for our purposes," according to Louis Kuehn, President of the Company. "We could scarcely have built structures better adapted to our needs. Shipping facilities are excellent and played an important part in our decision. Our business in the La Crosse territory has been rapidly increasing and our customers will now benefit by the quicker service which the La Crosse Branch will be able to render."

Frank Vyvyan will go to La Crosse, February 1st, from the Milwaukee plant to manage the new branch. Mr. Vyvyan, with over twelve years' service in the Milcor organization, is well equipped to extend the utmost in coöperation and service to the trade of that territory.

The Milwaukee Corrugating Company now operates branches at Kansas City and La Crosse and a branch sales office in Minneapolis, in addition to its extensive factories in Milwaukee, which were increased in 1923 by an addition of 50,000 square

feet of floor space, and which will be further increased during 1924. This expansion is in line with the policy of the Company to leave nothing undone to insure "same day" shipments in all territories.

Crull Says Your Radiator Can Be Repaired, Mr. O'Neill.

On page 19 of our December 22nd issue Walter O'Neill, —, Minnesota, inquired whether or not a Honeycomb radiator leaking in about the center could be repaired.

The following answer to this inquiry has been received from Fern Crull, —, Missouri:

TO AMERICAN ARTISAN:

Replying to Walter O'Neill's inquiry concerning the possibility of repairing a Honeycomb radiator, I wish to say that this radiator can be repaired very satisfactorily by using a small torch to solder it.

I find the best torch for this purpose to be one manufactured by the F. L. Curfman Manufacturing Company, Maryville, Missouri.

Yours very truly,

FERN CRULL.

—, Missouri, December 28, 1923.

Calendar Shows Excellent Views of Plants of Youngstown Sheet and Tube Company.

In line with its wall calendars of former years, the 1924 calendar of the Youngstown Sheet and Tube Company contains a considerable amount of interesting information besides the mere arrangement of days and dates.

Views are shown of the various plants at Youngstown, Ohio, including the recently acquired Brier Hill Division; Indiana Harbor, Indiana; Zanesville, Ohio; Niles, Ohio; Evanston, Illinois; Mayville, Wisconsin; Warren, Ohio.

Below each picture there is a description telling of the location of

the plant; the products made and the shipping facilities, by rail and water.

W. E. Watson, General Manager of Sales, in a letter to AMERICAN ARTISAN, makes the following statement:

"The calendar herewith is designed to remind our good friends and customers of the extensive additions to our facilities resulting from the purchase of the plants of the Brier Hill Steel Company and the Steel & Tube Company of America; and further, to remind you that it is our sincere desire to serve you during every month of 1924.

"May the New Year bring to you and yours prosperity and all other good things in great abundance."

No Wonder Ellis Had So Many Applications.

Here was a happy combination: A vacancy in a Florida sheet metal shop and a want ad in AMERICAN ARTISAN.

Is it any wonder that we received the following letter:

TO AMERICAN ARTISAN:

You need not run our advertisement any longer. We have a lot of applications to pick from. AMERICAN ARTISAN surely is a good paper.

Thanking you very much for your service, we are,

Yours truly,

WINTER HAVEN PLUMBING CO.

R. D. ELLIS.

Winter Haven, Florida, December 31, 1923.

Is there a sublimer spectacle on this earth than that of a man who absolutely refuses to surrender when everything, apparently, has been swept away from him, when he stands stripped of property, of family, of reputation, still holding on, with nothing left but clear grit and his faith in himself? There is no conquering such a man. He fights when every other soldier has dropped in the field. He still presses on when everybody else turns back, persists when everybody else gives up.

Architects' Whims Must Be Catered to When Making Gable Panel Ornaments, to Avoid Use of Substitute Materials.

Purpose of Ornament Is to Fill Blank Panel, and the Difficulty Lies in Making Absolutely Perfect Moldings by Hand Cornice Work.

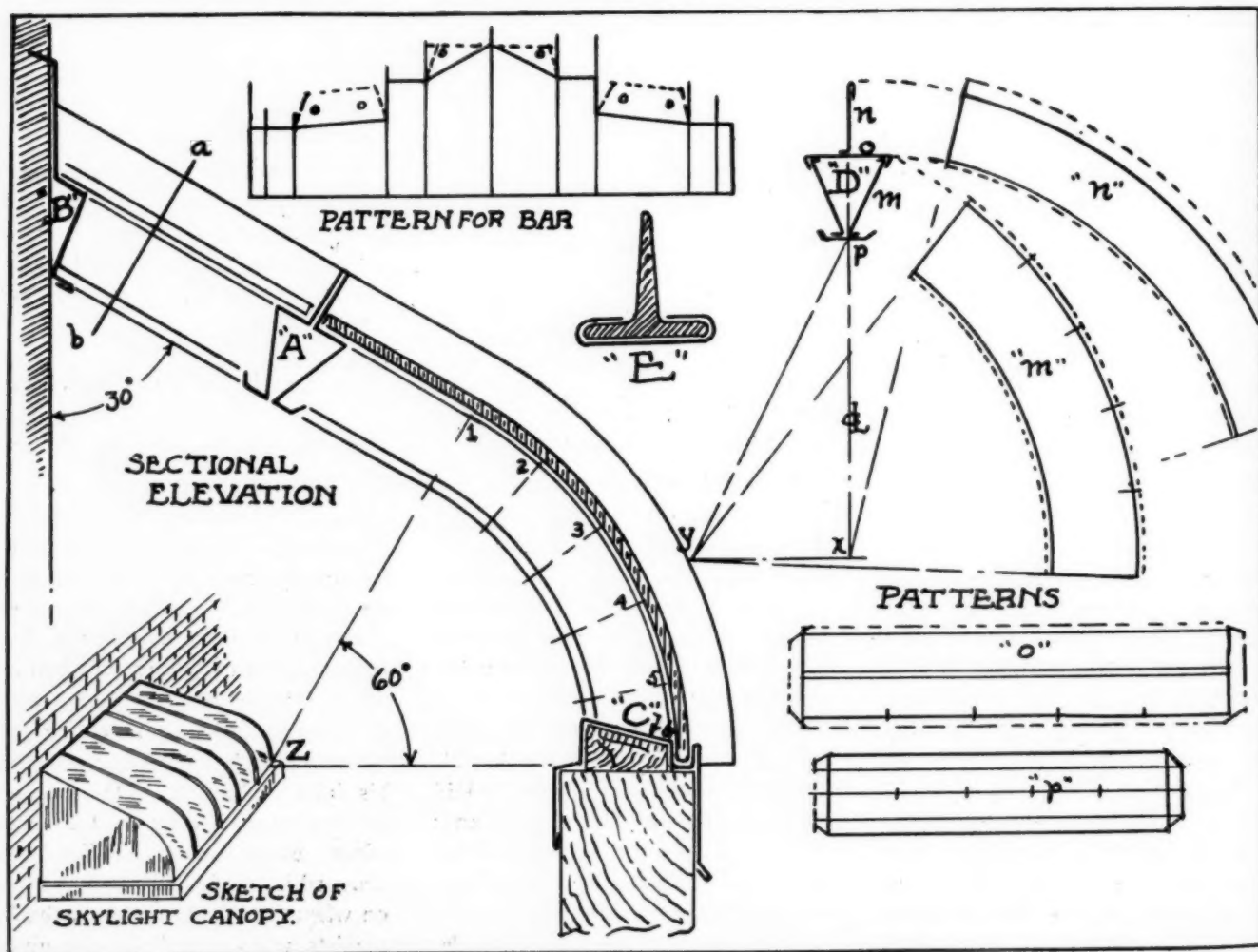
Written Especially for AMERICAN ARTISAN AND HARDWARE RECORD by O. W. KOTHE, Principal, St. Louis Technical Institute, St. Louis, Missouri.

SHEET metal workers who are interested in increasing their knowledge of the trade will study much of the existing work on buildings. On many buildings, such as hotels, public schools, private residences, observatories and the like, many unique examples of cornice and skylight work are met with, as well as wonderful piping systems for heating, ventilating and exhaust work. To merely look at them and say, yes, that is a skylight, its end curves downward, and let it go at

that, is not enough. The tradesman should take a close-up view, make sketches of such work, take it home and design it at least half size, then lay out all patterns. There is experience in that, because while going through the process of drawing out, you mentally go through the same procedure as when making up the fitting in the shop. In this way, technical training hastens experience, and that is why technically trained men have a greater abundance of working ability than just

the plain, common, good mechanic.

A skylight as we show in this drawing is rather unusual, although there are many of more complicated designs met with. In most curved skylight work, the tee bar "E" is used, with a metal strip slipped around the lower flange for the glass rest. This takes away the solid shock, and is not liable to crack the glass. But where these solid bars are not used, we sometimes meet with wooden bars; these are fast going out of use, and metal is being



Working Drawing of Pattern of Ornament to Fill Blank Panel.

substituted in numerous ways. The bar such as we show at "A" can be readily developed to the curve as shown, as at "D," which embodies the same principle as describing the patterns for a funnel, or for the chamfer sides of an octagon gutter, or any other flaring circular object.

We first draw the pitch line of skylight, which in this case is to 30 degrees, and then draw a line, as 1-Z, to a 60-degree line with the base, describing the outline as 1-6. We next design common bar section "A" and through its different points draw lines parallel as shown. Then at the top we detail the ridge bar section "B" much the same as shown, which rests against a brick wall and can be anchored by means of expansion bolts placed eighteen inches apart. The lower curve "C" is designed so as to accommodate the gutter of common bar "A" and permit the moisture to flow out underneath the glass through holes cut through the glass rest between each section. The glass rest is merely the metal overlaid as shown to prevent the glass from slipping down if the putty should loosen up. Where the putty is soft, and the bars are first oiled with linseed oil before applying the putty, the chances are the glass will imbed securely in the putty and will never leak or cause the putty to crack loose. By using the linseed oil on the galvanized iron bars, it also prevents the putty from curling up while putting in position.

The pattern where the bar "A" fits to the ridge "B" is laid off much the same as a common skylight. In this case we work from the line a-b and treat the ridge bar "B" as a butt line. The girth is taken from section "A," and with that we develop the pattern for the bar as shown, while edges must be allowed with sufficient widths to enable riveting in position on the ground; since canopies like this would be assembled on the ground or in the shop and put up in one piece. But to treat the curved portion of the bar we draw the detail "C," making joints where shown, and then draw the vertical center line. Next pick

the radius Z-1 from elevation and set it as o-X, from which points square out a horizontal as X-Y. Now extend the side line of bar "D" until it intersects the horizontal center line in point Y. This gives the radius for describing the slant line m as pattern "m." Its length is made equal to the girth 1-2-3-4-5-6 of elevation. The fin of "D" is described from X as center and is made equal to that of elevation as shown. Even if these patterns are an inch or two longer, there is no harm done, since some trimming is necessary to fit on the lower curb "C." The parts o and p of "D" are just flat pieces of metal as shown below "o" and "p." These various patterns are formed up as shown and then securely soldered together, seeing to it that there is no twist in the work. These are then

joined to the main straight bar, which enables making the entire bar in one length.

Considerable study is necessary, in order to make these bars so they will be strong and, if necessary, they would have to be made with an extra core iron; although the curved glass in itself is of greater strength than the flat glass and this has some advantage. Wherever the workman meets with such designs, he should take particular note of them, and if the structural work is of wood or structural steel, he should plan out designs for making a suitable common bar out of sheet metal. This helps produce creative energy, and creative energy is always the forerunner of executive ability which puts the mechanical ability to work.

Chicago Built 335 Million Dollar's Worth of Residences and Business Structures in 1923.

With Stabilized Labor Conditions Prospects Are That This Great Activity Will Continue Through 1924.

BUILDING trades workmen operating under the Landis Award may feel reasonably sure of steady employment through 1924, say contractors and others who have analyzed the situation and feel qualified to predict. These observers declare there is every indication of continuation of the great building activity that is giving 1923 an enviable place in industrial history. Some of them are so optimistic as to believe that the 1924 total will eclipse the enormous 1923 total, which promises to represent approximately \$335,000,000 in Chicago and suburbs.

"Individual dwellings have not kept pace with apartment buildings in the pronounced building activity," said one of these observers, "and apartment buildings have not kept pace with the demand for accommodations. Chicago is expected to have a population of 3,000,000 within another year, and the city is not equipped to care for such a great population. More buildings and

still more buildings are necessary. Home building, of course, is essential, but the erection of commercial and industrial plants also must fit into the general scheme of things."

J. E. Duffield, manager of the promotion department of the Citizens' Committee to Enforce the Landis Award, believes that prospective builders of homes should arrange all preliminary plans as soon as possible, so as to be ready to build at the earliest possible time in the spring. Indications are for a big boom in home building in many of the suburbs.

"Tremendous strides toward meeting general requirements have been made this year," said Mr. Duffield, "but still greater strides must be made. Leading Landis Award contractors declare there is nothing on the surface to indicate a cessation of building activity. There may be the occasional lull, but this will give the builders an opportunity to catch their breath and plan ahead. All in all, it seems that 1924 will

keep pace with the great showing of 1923. It is amazing that all the building in Chicago this year has been devoid of labor disturbance of any consequence, but it simply goes to emphasize what can be done in a progressive way when public-spirited citizens band together to effect cleanness in an industry. No sym-

pathetic or jurisdictional strikes—plenty of work for well intentioned mechanics—desirable working conditions—these are some of the outstanding things that have resulted from the organized movement to keep building conditions in Chicago clean and fair and honorable.”

Sheet Metal Contractors Have Awakened to Need of Training Apprentices.

Courses in Various Trade and Technical Schools Prove That Apprentice Training Is Going Forward Rapidly.

AT last the Sheet Metal Contractors are beginning to see the fallacy of neglecting to give the training of apprentices the attention which it demands; they are now training apprentices.

As long as the Sheet Metal Industry was of only minor importance in the general scheme of things no one paid any particular attention to the recruiting end of the business; the workers were only “tinnerns,” while the job itself had little more dignity than any ditch digger’s job with all due respect to those “old timers” who started in the ranks and have risen from sheer persistency and will power to positions of some eminence in the profession today.

The contractors of the profession today realize that if they do not have young blood to take the places of those stepping up, the industry cannot expect to meet the increased demand for sheet metal work which is sure to come in the next few years. Other industries in looking forward have seen the necessity of this provision. It is surprising, in view of the abundance of examples in other industries, that the Sheet Metal Industry did not take its cue long ago.

Even the individual industrial corporations have seen the need of perpetuating their source of skilled labor supply; they have worked out highly efficient methods of meeting this problem and we are glad to note that the Sheet Metal Men have at last awakened to the necessity of doing likewise. This means that as

the demand for sheet metal work increases, trained men will be available or in the making to do the work, and the various contractors’ organizations which are coöperating to bring about this most desirable end are to be given credit for their initiative in looking forward and having the courage to act on beliefs as they see them.

Keep up the good work you have started. Time will prove that you are on the right road.

Best of Business Education Should Be Shared Between Employer and Employee.

Alvan T. Simonds, in his new book, “Business Fundamentals,” says:

“A Business Should Educate Its Employees.

“The ideal plan of employe education is that in which the business and the employe share equally in the expense. If the education is given to the employe with no cost to him, he is likely to consider it worth no more than it costs. The boy who pays his own way through college is the one who fully values a college education.

“It pays a business to educate its employes so that they may become more skillful in their work.

“It pays a business to educate its employes so that they may become more careful in avoiding accidents, and in looking out for their health and habits.

“It pays a business to educate its employes in economical living, in thrift and saving.

“It pays a business to educate its employes so that they may have a better understanding of citizenship and the government under which they live and work.

“It pays a business to educate its employes in the fundamental principles of economics and in the workings of economic forces.

“Some hold that it pays a business to educate its employes in recreation and in how to play and enjoy themselves at little or no cost.

“Some hold that it pays a business to educate its employes in vocational work, and hobbies, such as music, dramatics, photography, radio and gardening.

“Lesser labor turnover, higher morale, increased good will, greater skill, steadier work, cleaner living and happier homes, better citizenship, less likelihood of being misled by radicals and fanatics, are among the results that a business may secure by undertaking the education of its employes.

“It pays.”

Workman of Today Is the Owner of Tomorrow.

The social concept in which this Republic was founded was one of a society distinctly fluid, with no door closed against an ambitious or an able man. There is no bar of caste or custom or habit in America that the able and ambitious may not rise stratum by stratum to the very top. You know it is true that ninety-five per cent of the leaders of industry today have risen from the very lowest ranks. This stimulates effort. The workman of today becomes the foreman of tomorrow, and he the superintendent of the day after, then the manager, then the owner of industry. A great stimulant reaches every single individual effort, by the prospect, sure and safe, held out to those who are equipped with ability or character, with willingness to strive, and the vast aggregate of effort has created a splendid story of aggregate national achievement.

Indiana Sheet Metal Contractors and Fur-Mets Will Meet in Indianapolis January 29 and 30.

Fur-Mets Nominate Two Tickets for Election of Officers and Announce Date of Annual Banquet.

O. VOORHEES, Secretary of the Indiana Fur-Mets, the association of sheet metal and furnace jobbers and salesmen doing business in Indiana, in the following letter announces the date of the annual election and banquet in connection with the annual convention of the Indiana Sheet Metal Contractors' Association, to be held January 29th and 30th, in the Cadle Tabernacle, Indianapolis:

To AMERICAN ARTISAN:

We are enclosing herewith the formal notice of our Annual Convention and Banquet, which will be tendered to the Indiana Sheet Metal Contractors' Association, including our own membership of course. This notice also contains the list of names of candidates for offices and committees for the ensuing year, as reported to us by the Nominating Committee.

The committee felt that it would be well to name two tickets, in order that the membership might more fully take part in the choice of their officials.

This information is being sent you in advance, in order that you might have the information for preparation of listing our convention date and giving such publicity as you may desire to the whole arrangement.

Thanking you in advance for any such publicity, we shall hope to see our membership from your Journal present during the whole time.

With kind regards and wishing you A Happy, Prosperous New Year, we are,

Yours very truly,
INDIANA FUR-METS.
O. VOORHEES,
Secretary.

The two tickets follow:

Regular Ticket.

President—Paul R. Jordan.
Vice-Presidents—Karl Roth, A. J. Becker, E. C. Fölkening and Ralph Ingalls. (Four to be elected.)

Directors—Phil. H. Geitz, H. A. Beaman, Harry Neal and F. A. Wilkening. (Four to be elected.)

Treasurer—J. C. Henley.
Secretary—O. Voorhees.

Membership Committee—Ben Booth, Chairman; E. M. Pursell and W. R. Lawson.

Independent Ticket.

President—Phil. H. Geitz.

Vice-Presidents—F. A. Wilkening, F. L. Canine, J. J. Shuttleworth and Robert Kruse. (Four to be elected.)

Directors—H. O. McElwain, George Thomas, Paul R. Jordan and E. W. Norman. (Four to be elected.)

Treasurer—J. C. Henley.
Secretary—O. Voorhees.

Membership Committee—Harry R. Jones, Chairman; Charles Machett and Rolland Wilcox.

Convention Call.

Our own Convention, together with the Convention of the State Sheet Metal Contractors, will be held in Indianapolis on January 29 and 30, and the State Convention of the hardware dealers, together with their exhibition in Cadle Tabernacle, will also be in session during the same week.

We earnestly hope we shall have your attendance and participation in all our exercises, including the election of our officers and attendance and coöperation in the banquet, which will be held on the night of the 30th.

We anticipate your attendance and coöperation to make the 1924 Convention interesting and profitable.

Van Denberg Supply Company, Rockford, Illinois, Wants to Buy Complete Set of Tinnerns' Tools.

Get on the job, you salesmen and letter writers!

Here is a good chance to sell a complete set of "Tinnerns' Tools" to a well-rated concern, as per the following extract from a letter of Van Denberg Supply Company, 209 East State Street, Rockford:

"We are in the market for a complete set of Tinnerns' Tools and will appreciate literature and prices from manufacturers."

Harry S. Van Denberg is President of the Company.

Reward for Effort and Ability Comes in Greater Production Power.

Invention will always keep ahead of human needs, and human desires will always aspire to enlarged possession and daily use. The whole history of this process shows that it will share its benefits and distribute its savings and earnings through the natural process of secure employment, increased productive power and widened opportunity for the reward of ability and effort.

It Costs Money to Leave Electric Lights Unclean.

Unclean electric lamps and reflectors are adding 10 per cent annually to America's lighting bill, according to a recent estimate. To improve lighting in the home and places of business the American Institute of Electrical Engineers advises that all electric globes and reflectors be washed at least four times each year.

Notes and Queries

Oven Door Springs.

From G. F. Chapman, Linton, Indiana.

Please advise me who carries a general stock of oven door springs.

Ans.—The William D. Gibson Company, 1802 Clybourn Avenue, Chicago, Illinois.

Radiator Repair Outfits.

From A. J. Bridges, Bedford, Iowa.

Where can I buy supplies for automobile radiators?

Ans.—The F. L. Curfman Manufacturing Company, Maryville, Missouri.

Kitchen Accessories Window Display Produced During Better Homes Exposition Week at Kansas City.

Otto J. Gress Takes Full Advantage of Display Window's Suggestive Power in Arranging for Bunting Hardware Company.

THE recent advertising campaign inaugurated in connection with the Better Homes movement did a tremendous work in increasing the sale of house furnishings.

Now, the sale of house furnishings must necessarily include those articles which make for the saving of time and labor and add to the convenience in the commissariat, that most important department of every household.

need any further comment.

It is to be regretted that more retail stores do not take full advantage of the power of the window displays to pull orders. The window display has a power of suggestion which cannot be duplicated, for the simple reason that you cannot go out on the sidewalk, knock a man down and sit on his chest while you suggest things for him to buy by word of mouth; neither can you

West Virginia Hardware Merchants Will Meet January 15 to 18.

Tuesday, January 15th, Registration and opening of the Exhibit Hall until 6 p. m. Tuesday evening, 8 p. m. meeting in the assembly room of the Frederick Hotel; speakers of the evening will be Will H. Rattenbury, Vice-president, Landers, Frary & Clark, New Britain, Con-



Window Display of Kitchen Accessories Arranged by Otto J. Gress for Bunting Hardware Company, 812 Walnut Street, Kansas City, Missouri, During Better Homes Exposition Week.

The sale of kitchen ranges and gas or gasoline stoves came in for a great deal of prominence during the movement and many stores made up window displays especially for that purpose.

The accompanying window display was arranged by Otto J. Gress for the Bunting Hardware Company, 812 Walnut Street, Kansas City, Missouri. The view as shown is self-explanatory and does not

drag him into the store and lead him past the show cases. But he walks past the window of his own accord, his natural curiosity compels him to look in and what he sees influences him in many instances to open his purse strings.

Treatment of customers ought to be based on a real interest in pleasing them, not on a mere surface politeness assumed for the occasion.

necticut, and Herbert P. Sheets, Secretary, National Retail Hardware Association, Indianapolis.

Wednesday morning, 9 a. m., meeting at the exhibit hall, president's address, report of the secretary-treasurer, question box discussions, balance of the day spent with the exhibitors. Exhibit hall open to the public in the evening with music.

Thursday morning, 9 a. m., meet-

ing at the exhibit hall, question box discussions of problems affecting the trade. These question box discussions will be led by members. Afternoon spent with exhibitors until 6 o'clock p. m. 6:30 banquet for all members, retail, honorary and traveling, with Roy F. Soule, Editor *Hardware Dealers' Magazine*, as the speaker of the evening, subject "Down in Front." Balance of the evening will be spent in dancing.

Friday morning, meeting at the exhibit hall, reports of committees,

unfinished business, etc., balance of time spent with the exhibitors.

One of the question box discussions will be led by George Pfarr, Akron, Ohio, president of the Ohio Hardware Association, and his subject will be, "Does it Pay to be Friendly With Your Neighbor." Another question box discussion will be led by R. S. Kuykendall, Vice-president of the Association, Moorefield, West Virginia, whose subject will be, "Store Arrangement and Pricing of Goods."

Last Call to Enter AMERICAN ARTISAN Window Display Competition! There's Still Time!!

Contest Closes January 12, 1924, Which Gives You One Whole Week to Enter Your Photographs.

THE psychology of color as applied to window displays is worthy the serious study of every retail dealer. Watch its application in any store. The customer's attention is caught by the strikingly colored package or label. It may be the very article wanted—if so, the purchaser is already favorably influenced. Again, it may create an unpremeditated desire to buy; times without number you have seen the man apparently hurrying past the store window hesitate for an instant, then wheel about and enter the store. There again, color influences the purchase.

To create a window display that will stand the acid test of creating sales is an exacting problem.

Therefore, if you are in business to progress and win, and we don't doubt for an instant but that you are, you cannot afford not to take advantage of the opportunity offered you by AMERICAN ARTISAN AND HARDWARE RECORD window display competition to get the other fellow's angle on the same subject. Then, too, if you want the other fellow's slant, you will have to give him yours in return.

In addition to this, you stand an equal chance with your brothers in other towns of winning one of the four cash prizes offered.

The contest closes January 12,

1924. Test your ability as a window display maker. Send in your photographs without further delay.

Rules Governing Contest.

The photograph, together with descriptions of how the window displays were arranged and the materials used, may be sent by mail or express, charges prepaid, and must reach this office not later than January 12, 1924.

Each photograph and description must be signed by a fictitious name or device and the same name or device must be placed within a sealed envelope containing the real name and address of the contestant. This sealed envelope is to be enclosed with the photograph. Contestants may enter as many window displays as they desire.

AMERICAN ARTISAN AND HARDWARE RECORD reserves the right to publish all photographs and descriptions submitted in this competition.

A competition committee of three will be appointed, one of whom will be an expert window dresser and one an experienced hardware man. This committee will pass upon the merits of all photographs and descriptions received, without knowing the names or addresses of the senders, and will decide the winners of the contest.

It pays to advertise—regularly.

It Does Not Always Pay to Put Your Best Foot First.

That it does not always pay to put your best foot forward was recently proved to a certain department store buyer by his own experience. At the front of his department, which carries garments of the gift type, he had tables showing different high-priced articles attractively boxed and prominently labeled "Holiday suggestions." These garments averaged \$20 to \$25 in price. Back of them were placed groups of merchandise ranging in "steps" down to about \$5. To get to them, the prospective customer had to pass the better stuff and, if she had had a \$5 article in mind, it looked so poor by comparison with the other she had seen that she bought none of them. After noting sale after sale lost in this way, the buyer reversed the arrangement of the stocks. In this way his clerks not only sold the women with \$5 to spend, but found it relatively easy to make sales of \$10 and \$15 goods to women who wanted something fairly nice.

Farmer Buying Power Increase Shown by 1923 Mail Order Sales.

The American farmer is regaining his purchasing power. The most striking index of improvement in the agricultural situation is the renewed prosperity of the mail order industry.

The 1923 combined sales of the two big Chicago mail order concerns totaled around \$350,000,000, an increase of about \$83,000,000 over the sales of 1922. Sales of Sears, Roebuck & Company for 1923 were reported at \$215,540,604, an increase of \$33,374,780, or 18.32 per cent, over 1922. December sales at \$20,796,898 were slightly above November and also December, last year.

Sales of Montgomery Ward & Company for 1923 were around \$134,000,000, an increase of about \$42,000,000, or 46 per cent, over 1922.

It costs money not to advertise.

Here's Summary of 1923 Federal Income Tax Return Requirements.

Find What Category You Come In, Then Avoid Disagreeable Annoyances by Filing Your Returns Without Delay.

IN order to point out briefly the requirements of the Federal Revenue Act as they affect the average taxpayer—salaried persons, business and professional man, and farmer—the Bureau of Internal Revenue has released a group of simple stories embodying the essential factors a knowledge of which is necessary to the correct filing of the income tax return and payment of the tax.

As the time limit for filing the return extends only to March 15, 1924, it behooves every one required to pay an income tax to become familiar with its provisions.

What Form to Use in Filing Return.

January 1, 1924, marks the beginning of the period for filing income-tax returns for the year 1923. The period ends at midnight of March 15, 1924. Heavy penalties are provided by the revenue act for failure or willful refusal to make a return and pay the tax on time.

Form 1040A, heretofore used for reporting net income of \$5,000 and less, from whatever source derived, has been revised in the interests of the largest class of taxpayers—wage earners and salaried persons. Reduced from six pages to a single sheet, Form 1040A is to be used for reporting net income of \$5,000 and less derived chiefly from salaries and wages. Persons any part of whose income is derived from a business or profession, farming, sale of property or rent, though the amount is \$5,000 or less, will be required to use the larger form, 1040. The use of Form 1040 is required also in all cases where the net income was in excess of \$5,000, regardless of whether from salary, business, profession, or other taxable sources.

It being impossible to determine at this time which form is desired, copies of both forms will be sent taxpayers who filed individual re-

turns for the year 1922, and may be obtained also at the offices of collectors of internal revenue and branch offices upon written request.

Who Must File and Exemptions.

Every single person whose net income for the year 1923 was \$1,000 or more or whose gross income was \$5,000 or more, and every married couple (living together) whose net income was \$2,000 or more or whose gross income was \$5,000 or more, must file an income-tax return.

Broadly speaking, gross income is all income received by the taxpayer during the year from salary or wages, business, trade, profession or vocation, dealing in property, interest, rent, or dividends, or from the transaction of any business carried on for profit. Net income is gross income, less certain specified deductions for business expenses, bad debts, taxes, etc.

The exemptions are \$1,000 for single persons, \$2,500 for married couples (living together) whose net income for 1923 was \$5,000 or less, and \$2,000 for married couples whose net income was in excess of \$5,000. An additional credit of \$400 is allowed for each person (other than husband or wife) dependent upon the taxpayer for chief support if such person is under 18 years of age or incapable of self-support because physically or mentally defective.

The normal tax is 4 per cent on the first \$4,000 of net income in excess of the exemptions and credits and 8 per cent on the remaining net income.

Defining the Head of a Family.

If you are single and support in your home one or more relatives over whom you exercise family control, you are the head of a family and entitled, in your income-tax return for the year 1923, to the same exemptions granted a married person. These are \$2,500 if the net

income was \$5,000 or less and \$2,000 if the net income was more than \$5,000. In addition the head of a family may claim a \$400 credit for each person dependent upon him for chief support if such person is under 18 years of age or incapable of self-support because mentally or physically defective.

For example, a son supports in his home an aged mother and two sisters 14 and 16 years of age. His net income for 1923 was \$3,000. He is entitled to an exemption of \$2,500 plus a \$400 credit for each dependent, a total of \$3,700. While he pays no tax, he must file a return, because his net income was in excess of \$1,000.

An exemption as the head of a family can be claimed by only one member of a household.

Income from Business and Profession.

In making out his income-tax return for the year 1923 the business man, professional man, and farmer will be required to use Form 1040, regardless of whether his net income was or was not in excess of \$5,000. The smaller form, 1040A, is used for reporting net income of \$5,000 or less derived chiefly from salary or wages.

All items of gross income must be reported. In the case of a storekeeper gross income usually consists of the gross profits on sales, together with income from other sources. The return must show the gross sales, purchases, and cost of goods sold.

The professional man, lawyer, doctor, dentist, must include all fees and other compensation for professional services. The farmer must report as gross income the proceeds of sale or exchange of products raised on the farm and the profits from the sale of products purchased by him and resold. He must also report gross income from all other sources.

Taxpayers, in order to take full advantage of the deductions to which they are entitled, are advised to study carefully the instructions on the forms under the head "Income from business or profession."

What Business Expenses May Be Deducted.

In the making of his 1923 income-tax return the business man, professional man, and farmer may deduct from gross income all items properly attributable to business expenses. In the case of a storekeeper they include amounts spent for rent of his place of business, advertising, premiums for insurance against fire or other losses, the cost of water, light, and heat used in his place of business, drayage and freight bills, the cost of repairs and maintenance to delivery wagons and trucks, and a reasonable allowance for salaries of employees. A professional man, lawyer, doctor, or dentist may deduct the cost of supplies used in his profession, expenses paid in the operation and repair of an automobile used in making professional calls, dues to professional societies, subscriptions to professional journals, office rent, cost of light, heat, and water used in his office, and the hire of office assistants. The farmer may deduct amounts paid in the production and harvesting of his crops, cost of seed and fertilizer used, cost of minor repairs to farm buildings (other than the dwelling), and cost of small tools used up in the course of a year or two.

When Losses Are Deductible.

In computing his net income for the year 1923 a taxpayer may deduct from gross income all losses, incurred not only in his business, trade or profession, but in any "transaction entered into for profit" not compensated for by insurance or otherwise.

To be allowed, losses not incurred in trade or business must conform closely to the wording of the statute. For example, a loss incurred in the sale of a taxpayer's home, which at the time of purchase was bought without intention of resale, is not deductible because it was not a transaction entered into for profit.

Losses sustained in the operation of a farm as a business venture are deductible. If sustained in the operation of a farm operated merely for the pleasure or convenience of

the taxpayer, such losses are not deductible.

Losses arising from fires, storms, shipwreck, or "other casualty"—for example, a flood or frost—whether or not connected with the taxpayer's business, may be deducted from gross income in his 1923 income-tax return. If his home or automobile is destroyed by fire, the loss is deductible for the year in which it occurred.

Loss of property by theft or burglary is an allowable deduction and need not be incurred in trade or business. A loss for embezzlement is also deductible.

All losses are deductible only to the extent by which they are not compensated for by insurance or otherwise.

Time Limit on Deductions for Bad Debts.

Deductions for bad debts and contributions, which are allowable under the revenue act, form a considerable item in the income-tax returns of many taxpayers. Bad debts can be deducted only for the year in which they are ascertained to be worthless and charged off the books of the taxpayer. The return must show evidence of the manner in which the worthlessness of the debt was discovered and that ordinary and legal means for collection have been or would be unavailing.

Unpaid loans made to needy relatives or friends with little or no expectation that they would be repaid are not deductible but are regarded as gifts.

Concerning Charitable Contributions.

Deductions for contributions to corporations or organizations "organized and operated exclusively for religious, charitable, scientific, literary, or educational purposes * * * no part of the net earnings of which inures to the benefit of any private stockholder or individual" are deductible to the extent of 15 per cent of the taxpayer's net income for 1923, computed without the benefit of this deduction. Every church constitutes a religious corporation or organization for the purpose of this deduction. Donations to missionary funds, church buildings, pew rents,

assessments, and dues paid to churches are deductible.

Deductions for contributions to political campaigns are not allowable.

Widows Classed as Single Persons.

For the purpose of the income tax law a person's marital status is determined as of the last day of his or her taxable year, December 31, if the return is made on the calendar year basis, as most are. If on that day he was single, he must file a return if his net income for 1923 was \$1,000 or more, or if his gross income was \$5,000 or more. He is entitled to a personal exemption of only \$1,000. If he was married, although the ceremony was performed on December 31, he is granted the exemption allowed a married person for the full year, \$2,500, if his net income and his wife's combined was \$5,000 or less, and \$2,000 if the combined net income exceeded \$5,000. If the combined net income of husband and wife for the year 1923 equaled or exceeded \$2,000 or the gross income equaled or exceeded \$5,000, a return must be filed.

A widow or widower whose spouse died before the end of the year is classed as a single person. Divorcees and persons separated by mutual consent are classed as single persons.

Penalties Engendered for Failure to File.

The period of filing income-tax returns for the calendar year 1923 ends at midnight of March 15, 1924. Heavy penalties are provided by the revenue act for persons who fail or "willfully refuse" to make a return or pay the tax on time.

For failure to make a return a taxpayer becomes liable to a penalty of \$1,000, and a further penalty of 25 per cent of the amount of the tax, unless a later return is filed and it is satisfactorily shown that the delinquency was due to a reasonable cause and not to willful neglect.

For willful refusal to make a return or pay the tax on time a taxpayer becomes liable to a penalty of \$10,000 or one year's imprisonment,

or both, together with the cost of prosecution, and an added penalty of 25 per cent of the amount of the tax.

If in an income-tax return attempt is made to evade or defeat the tax, the offender is liable to imprisonment not exceeding one year and to a fine of not more than \$10,000 and costs, and, in addition, 50 per cent of the total tax evaded. If the understatement is due to negligence but without attempt to defraud, there is added 5 per cent of the total amount of the deficiency plus interest at the rate of 1 per cent a month until paid.

When Extension of Time for Filing May Be Granted.

When, by reason of illness or absence from home, additional time for filing an income-tax return is required, the taxpayer should address to the collector of internal revenue for the district in which he lives a

request for an extension. This request must be mailed before the return is due, March 15, 1924.

The collector may grant an extension of not exceeding 30 days. As a condition for granting such an extension the collector may require on or before March 15 the filing of a tentative return. A tentative return should be made on the usual form, marked "Tentative," and should contain a sworn statement of the estimated amount of tax due.

If before the end of a 30-day extension an accurate return cannot be made, appeal for a further extension must be made to the Commissioner of Internal Revenue, Washington, D. C., together with a full recital of the causes for the delay. The commissioner will not grant an additional extension without a clear showing that a complete return cannot be made within the 30-day period.

and that they have the privilege of shopping as they desire by being able to look about as they please and handling articles if they choose. It is often found during a rush period that a customer has made his or her selection by the time a salesman gets to them. In such an instance it is invariably found that the customer is well pleased and in a contented state of mind.

There is nothing so irritating as to have to wait to receive attention. However, if a customer finds the store force busy, but the merchandise so displayed that they enjoy the freedom of looking around and making their independent selection, then they scarcely realize the lapse of time until they have the attention of a salesman.

A great majority of customers judge a store by the character of the employees rather than that of the manager, for in many instances it is only the employees that they come in contact with. It is necessary that the sales people and all employees, in fact, have a complete understanding and working knowledge of the general store policy and service you are attempting to render. How this service ideal is looked upon and taken advantage of by the public depends greatly on the employees and their application of it to the everyday store problems.

A big asset of the store of today is courtesy. When your customer enters he likes to feel that you are glad to see him, that you recognize him, value his call and appreciate the privilege of serving him. There is nothing more harmful to a store than for a customer to be obliged to carry away with him a bad impression of a salesman. There is only one rule to follow: you are in business to serve the public, your customers are your share of the public. The ability of a salesman to please the customer determines his value to his employer.

If any salesman is not capable of handling customers courteously and in conformity with the store policy, it is up to the manager to change the salesman in order that the standards of service be maintained.

Hints About Store Management That Will Build Good Will and Increase Sales.

Increased Selling Calls for Closer Attention to Details of Counter Display on Part of Salesmen.

EVERY storekeeper knows or should know that the public today is looking for service, and people go to that store which caters to them most, even though the distance is considerably off their regular course.

It is not only necessary that he carry a complete, well selected stock, rightly priced, but it is equally as important that his stock should be so arranged and displayed as to make the store inviting and easy for the customer to shop. All goods should be clean and well kept; remember that dusty, shop-worn merchandise does not appeal to anyone, and has a tendency to interfere with a desire to purchase.

In his store he should make the effort to so display his builders' hardware, tools and many other lines on doors and in wall cases, so that they will attract attention. Displaying goods this way makes it possible for the customer to come in contact

with the items they are interested in, as well as getting a better general knowledge and more favorable impression of the stock. A broad ledge in connection with your tool case or other wall display cases is very convenient.

You will find a wonderful opportunity in appealing to the women shoppers through a systematic and artistic arrangement of kitchen utensils on shelves, oblong tables and display racks. Always attempt to have the assortment complete and attractive, and containing as many new items as you can find that will be helpful and needed. Remember the customers like to handle merchandise and with that handling comes a desire to possess. There are also times when they rather enjoy waiting on themselves and looking things over leisurely. This can only be done when stock is accessible and plainly marked. Let your customers feel that your store is their store

Goods should be neatly wrapped and carefully delivered in accordance with any promises made. These last may seem unimportant, but they indicate that you think well enough of your merchandise to give it proper care, and that you can be depended on if items are needed at a stated time.

Importance of Well Posted Salesmen.

Your salesmen should be well posted as to their merchandise and its uses. After a close study of the customers' needs, they may be able to offer helpful suggestions, although not expecting immediate returns. It is this information given when needed that makes for a closer bond of friendship between you and your customer and makes you certain of his good will.

Your customer expects you to know more about the article he wishes to purchase than he does, and you must always try to live up to this belief that he has in you.

Customers.

Your customers in trading with you only ask to be treated as you would like to be, were you in their place. It is therefore necessary for you to study your store from the customer's angle and attempt to always surprise them by doing a little more than is expected of you.

A privilege of exchange policy should be in force. Be willing at any time to refund purchase price if goods are not satisfactory or as represented.

You are rendering a service when you carry accounts on your books for thirty days, and you must attempt to render a still greater service to your customers and the community by seeing that these accounts are paid when due. You should feel a moral responsibility in not attempting to sell, or allowing a customer to purchase more goods than they can afford to pay for in a reasonable time. You all know what it means to let accounts run—finally lost customer and lost account.

Good Will.

The good will of well served customers is one of the most satisfying results of salesmanship and good store service.

Coming Conventions

Western Retail Implement and Hardware Association, Missouri Theater Building, Kansas City, January 15, 16, 17, 1924. H. J. Hodge, Secretary-Treasurer, Abilene, Kansas.

The West Virginia Retail Hardware Association Convention and Exhibit, Huntington, West Virginia, January 15 to 18, 1924. James B. Carson, Secretary-Treasurer, 1001 Schwind Building, Dayton, Ohio.

Mountain States Hardware and Implement Association Convention, City Auditorium, Denver, Colorado, January 22-24, 1924. W. W. McAlister, Secretary-Treasurer, Boulder, Colorado.

Kentucky Hardware and Implement Association, Louisville, January 22-25, 1924. J. M. Stone, Secretary-Treasurer, 202 Republic Building, Louisville.

Sheet Metal Contractors' Association of Indiana, Hotel Severin, Indianapolis, January 29 and 30. Leslie W. Beach, Richmond, Indiana, is Secretary.

Indiana Retail Hardware Association, Inc., Convention and Exhibition, Cadle Tabernacle, January 29, 30, 31, February 1, 1924. G. F. Sheely, Secretary, Argos.

Nebraska Retail Hardware Association, Lincoln, Nebraska, February 5 to 8, 1924. George H. Dietz, Lincoln Nebraska, Secretary-Treasurer.

Wisconsin Retail Hardware Association Convention and Exhibition, Milwaukee Auditorium, February 6, 7, 8, 1924. George W. Kornely, Manager of Exhibits, 1476 Green Bay Avenue, Milwaukee. P. J. Jacobs, Secretary-Treasurer, Stevens Point.

Michigan Retail Hardware Convention and Exhibition, Grand Rapids, February 12, 13, 14, 1924. Karl S. Judson, Exhibit Manager, 248 Morris Avenue, Grand Rapids. A. J. Scott, Secretary, Marine City, Michigan.

Iowa Retail Hardware Association, Des Moines, Iowa, February 12, 13, 14 and 15, 1924. A. R. Sale, Secretary-Treasurer, Mason City, Iowa.

The Pennsylvania and Atlantic Seaboard Hardware Association, Incorporated, Convention and Exhibition at the Philadelphia Commercial Museum, Philadelphia, Pennsylvania, February 12, 13, 14 and 15, 1924. Sharon E. Jones, Secretary-Treasurer, Wesley Building, Philadelphia.

Illinois Retail Hardware Association, Hotel Sherman, Chicago, Illinois, February 18 and 19, 1924. Leon D. Nish, Secretary-Treasurer, Elgin, Illinois.

Ohio Hardware Association, Convention and Exhibition, Cincinnati, Ohio, February 19, 20, 21 and 22, 1924. James B. Carson, Secretary, 1001 Schwind Building, Dayton, Ohio.

New York Retail Hardware Association Convention and Exhibition, February 19, 20, 21, 22, 1924. Headquarters, McAlpin Hotel, and exhibition at Seventy-first Regiment Armory. John B. Foley, Secretary, 412-413 City Bank Building, Syracuse, New York.

New England Hardware Dealers' Association Convention and Exhibition, Mechanics' Building, Boston, February 20, 21, 22, 1924. George A. Field, Secretary, 10 High Street, Boston, Massachusetts.

North Dakota Retail Hardware Association Convention and Exhibition, Municipal Auditorium, Fargo, February

20, 21, 22, 1924. C. N. Barnes, Secretary, Grand Forks.

Michigan Sheet Metal and Roofing Contractors' Association, February 25 to 28, 1924, Hotel Kerns, Lansing. F. E. Ederle, Secretary, 1121 Franklin Street, S. E., Grand Rapids, Michigan.

Missouri Retail Hardware Association Convention and Exhibition, Marquette Hotel, St. Louis, February 26, 27 and 28, 1924. F. X. Becherer, Secretary, 5106 North Broadway, St. Louis.

Minnesota Retail Hardware Association Convention and Exposition, St. Paul Auditorium, February 26, 27, 28, 29, 1924. C. H. Casey, Secretary, Jordan, Minnesota.

California Retail Hardware Implement Association Convention and Exhibition, Civic Auditorium, San Francisco, March 18, 19, 20, 21, 22, 1924. LeRoy Smith, Treasurer, 112 Market Street, San Francisco.

Southeastern Retail Hardware and Implement Association, composed of Alabama, Florida, Georgia and Tennessee. Convention and Exhibition, Atlanta, Georgia, May 27, 28, 29, 1924. Walter Harlan, Secretary, 701 Grand Theater Building, Atlanta.

Hardware Association of the Carolinas Convention, Wrightsville Beach, North Carolina, June 17, 18, 19, 1924. T. W. Dixon, Secretary-Treasurer, 717-718 Commercial Bank Building, Charlotte, North Carolina.

South Dakota Retail Hardware Association and Exposition, Coliseum Building, Sioux Falls, March 4, 5, 6, 7, 1924. C. H. Casey, Secretary, Jordan, Minnesota.

Spring Convention of American Hardware Manufacturers' Association, Roosevelt Hotel, New Orleans, Louisiana, April 8, 9, 10 and 11, 1924. Frederick D. Mitchell, Secretary-Treasurer, 1819 Broadway, New York City.

Retail Hardware Doings

Iowa.

J. C. Duttweiler and Company have traded their hardware stock at Lockridge to William C. Rauscher for a thirty acre tract of land.

Kansas.

The Swartz Hardware Company has opened for business at 301-307 West Douglas Street, Wichita.

Texas.

Jack W. Neal and Son have sold their hardware business at 329 South Flores Street, San Antonio, to the A. C. Toudouze Hardware Company, 202 South Flores Street.

Cason, Monk and Company, hardware dealers at Nacogdoches, have purchased the opera house, a two-story brick building, from John Schmidt. The new owners will convert the building into an up-to-date hardware store.

Washington.

Eckmann-Locke Hardware Company of Yakima has been incorporated with a capital of \$25,000. The firm name has been changed to the Locke Hardware Company.

Wisconsin.

Wilbur Schultz of Harvard, Illinois, with his uncle, Chris Vick of Mukwonago, Wisconsin, have purchased the A. Jacobs hardware store at Delavan.

Increase Your Stove Sales by Actively Suggesting Savoriness of Properly Cooked Foods.

Nicholas Hardware Company Pushes Reliable Stoves with Price Reduction for Limited Period.

THE advertising of stoves and ranges is as much a science as that of oriental rugs. There is an abundance of opportunity for the exercise of the imagination in telling the story of the new range's labor-saving features. The only requisite necessary for the creation of romance in this field is a true observation of the merits of the stove and a correct perspective of the housewife's requirements.

The accompanying advertisement is one which the Nicholas Hardware Company, of Oak Park, Illinois, used in pushing "Reliable" gas ranges, manufactured by the Reliable Stove Company, Cleveland, Ohio, Division of American Stove Company. The ad was a full page 7x10 inches and appeared in *Oak Leaves* for November 10, 1923.

This advertisement carries a distinctive appeal in the form of an

ample money reduction; it gives the prospect an opportunity of comparing the offer with those of other stores.

A few constructive criticisms will not be amiss at this point.

The illustration is of the passive type; it could have been materially improved had it been made to show action. For instance a steaming tea kettle or dinner cooking on it would have added much to its pulling power. The oven door could have been lowered and a platter containing a roasting chicken placed upon it. The illustration should have been placed to the side. This would have concentrated the attention first upon the headline and illustration and then upon the reading matter.

Saturday, November 10, 1923

OAK LEAVES

Here is a Range positively without an equal in price and quality

Our Price
Only

\$61⁹⁰

Not Connected

Compare this with
Chicago prices at a
saving to you of
\$10.00
to
\$14.00

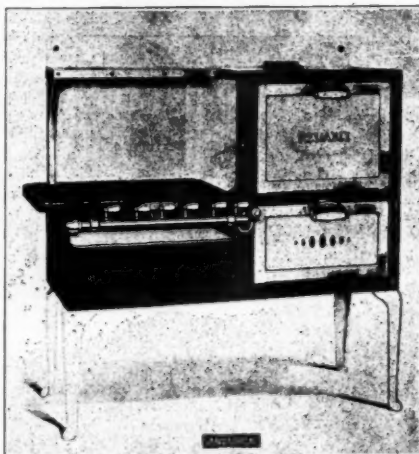
**This "Reliable"
Cabinet Gas
Range**

FOR YOUR
WHITE
KITCHEN

Is equipped with
porcelain enameled
splasher back and
side, body top,
splasher shelf
splasher rail and
enameled tray and
broiler pan. Also has
lighter. Either right
or left hand ovens.

Order Yours
Today

Only a limited number
at this price



**This "Reliable"
Cabinet Gas
Range**

In spite of the deep,
capacious oven and
ample cooking sur-
face takes up very
little room. Extreme
dimensions, 49½"x
24¾". Cooking top
from floor, 30¾ in.
Baking oven 18½"x
18x14 in. Broiling
oven, 18½"x18x10.
Cooking surface,
25½"x20½". Equipped
with Firefly lighter.

This up-to-the-minute, good looking, large capacity Gas Range of unbreakable "angliron" and steel construction, built for years of service. A range to delight the eye of any housewife. Has more new improvements and more good features than most any other range made. Main front and doors are steel, neatly designed. Doors are rigid, well fitted, white porcelain and easy to clean. No sharp corners or crevices. The neatness, the cleanliness, the efficiency, the economy of time and fuel and the better cooking which this range presents makes it the most popular stove of the season. Offered for a limited time only at this very special price, **\$61.90**.

SEE OUR OTHER VALUES IN GAS RANGES

Thirty styles to select from, all in stock. Immediate delivery.

Lower Prices Better Quality Larger Selection

NICHOLAS HARDWARE CO.

123 Marion Street, Phone 9600

Two Stores

823 S. Oak Park Ave., Phone 9700

From Chicago (No Toll) Mansfield 1300

*Fremont Stove Company,
Ohio, to Manufacture
for Retail Clientele.*

The latest developments of the Fremont Cast Ranges, Combinations and Oak Heaters are found in the recently issued 1924 catalog of the Fremont Stove Company, Fremont, Ohio.

The catalog is of the folder type, 3¾x8½ inches, and containing 20 pages.

Descriptions and illustrations of the Combination Ranges occupy a prominent position in the fore part of the catalog.

Kitchen, Fremont Oak Heaters and the Fremont Combination Ranges are given considerable publicity.

Gas Heaters and Gas Plates are described and explained in the latter part of the catalog.

In addition to this catalog the January number of the *Stove Lifter*, the delightful and "newsy" little mouth-piece of the Fremont Stove Company, is also off the press.

The following announcement is taken from the *Stove Lifter*:

"Up to January 1st this year, the Fremont Stove Company carried out a policy of building stoves almost exclusively for large mail order houses. This year, however, we

Illustration in This Advertisement Should Have Been Made to Show Action By Suggesting the Delicious Meals It Will Cook.

decided to change our policy and make an earnest endeavor to sell the retail trade.

"We have been very successful this year in building up a large cli-

entele of new customers and we wish to take this opportunity of thanking each and very one of our new customers very kindly for the coöperation given us during the past year."

Stove Industry Not Behind Others in Matter of Collective Activities.

Individual Efforts Must Not Be Lost Sight of—Manufacturers and Salesmen Should Help Dealers.

ON page 29 of our December 22 issue there appears a full page account of Twenty-sixth Annual Banquet and Reception of the Pennsylvania Stove Salesmen's Association.

After reading this account, we concluded that the various organi-

zations in the stove industry are indeed holding their own in this highly competitive age. No one will dispute this point with us. These men are all up and doing, and we do not doubt that many of their good deeds go unseen and unappreciated.

However much we may speak of

the collective effort of these men, we cannot lose sight of the fact that they as individuals, not only in Pennsylvania alone, but in all parts of the country, in every small hamlet, town and city the men in the stove industry are doing their share to help the industry along.

These individuals must in the last analysis be taken into consideration by both the salesmen and the manufacturers; they should be assisted in every way possible, because they are the ones who represent the industry to the consumer, the most important to consider throughout the entire chain of activities.

We have reproduced herewith a stove advertisement appearing in the Quincy, Illinois, *Herald*.

This advertisement has many good points to commend it; it proves that the advertiser is alert and ready to do his share toward better and bigger industry. He has brought those facilities at his command into play and, although there is some room for improvement, he has succeeded very well.

Stove Manufacturers Who Will Have Exhibits at Nebraska Convention.

The following stove manufacturers will have exhibits at Lincoln during the annual convention of the Nebraska Retail Hardware Association, February 5 to 8, 1924:

Roesch Enamel Range Company, Belleville, Illinois.

Malleable Iron Range Company, Beaver Dam, Wisconsin.

American Gas Machine Company, Albert Lea, Minnesota.

American Stove Company, St. Louis, Missouri.

Engman Mathews Range Company, Goshen, Indiana.

Majestic Stove Company, St. Louis, Missouri.

Copper-Clad Malleable Stove Company, St. Louis, Missouri.

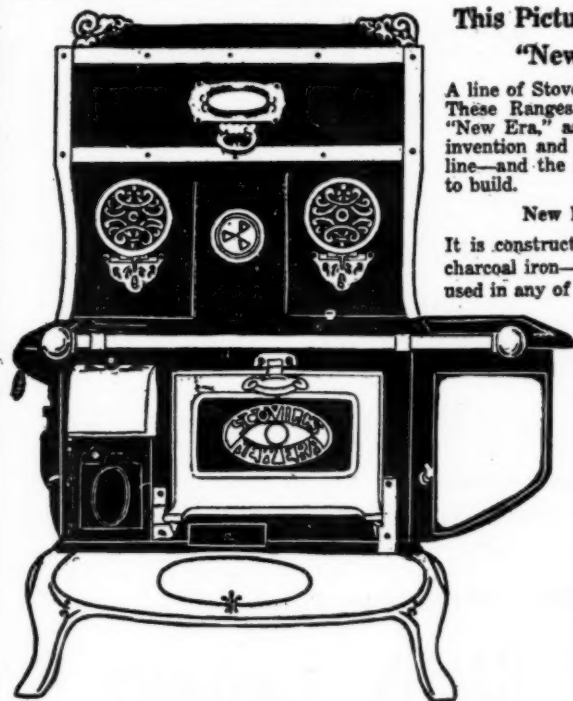
Gem City Stove Manufacturing Company, Quincy, Illinois.

Rock Island Stove Company, Rock Island, Illinois.

Howard Stove & Furnace Company, Ralston, Nebraska.

Save 20% On Your Stoves

We Will Pay You If You Will Select Your Stove or Range Early—Special Reduced Prices Prevail on All Our Stoves, including the "FLORENCE" HOT BLAST.



This Picture Represents the "New Era" Range

A line of Stoves built to last a lifetime. These Ranges are rightly named the "New Era," as every new and modern invention and idea is embodied in this line—and the best Range it is possible to build.

New Iron—No Scraps

It is constructed of pure pig iron and charcoal iron—(Not a bit of scrap iron used in any of our stoves.)

Guaranteed Bakers

We have thousands of "New Era" stoves and ranges in use, and everyone praises their baking quality.

No Blacking Necessary

We carry all styles, full enameled, in blue or grey, that requires no blacking. Semi-enameled with polished top that always remains bright—it's a pleasure to own a New Era.

FACTORY DIRECT TO YOU—FULLY GUARANTEED

These Ranges and Cook Stoves are made especially for us, having our own name on them as a guarantee to you of quality and satisfaction. You'll save the middleman's profit—and have lasting service, if you buy a "New Era" Range.

SCOVILL CO.

THE SATISFACTORY STOVE STORE

Advertisement Offering Liberal Discount.

The Opening of the New Year Demands a Readjustment of Advertising Appropriations.

Greater Frequency of Advertisements or Larger Space Will Pay in Sales for the Additional Investment.

Advertising typography and layout is as much of a science as the actual writing of the copy. The placing of the headline and illustrations to the best advantage requires

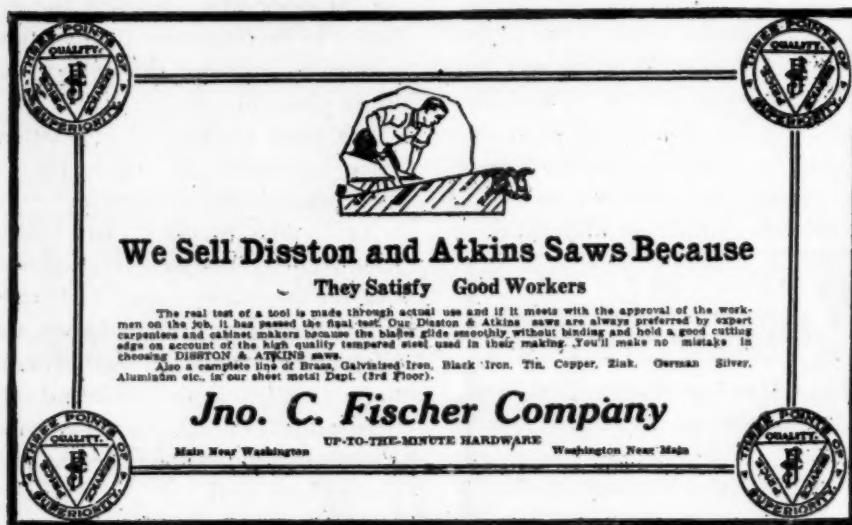
The accompanying advertisement was reprinted from the *Washington (Indiana) Democrat*. In this ad Mr. Bacon has taken one point of the stove advertised and featured it

point in favor of the stove which cannot be disputed either by his competitors or by the prospective customer.

The layout of the ad is very good and the ad itself is designed to start a train of thought in its reader's mind favorable to the electric stove.

* * *

The West Palm Beach, Florida, *Post* recently carried advertisements of a local hardware firm, which is



We Sell Disston and Atkins Saws Because
They Satisfy Good Workers

The real test of a tool is made through actual use and if it meets with the approval of the workmen on the job, it has passed the final test. Our Disston & Atkins saws are always preferred by expert carpenters and cabinet makers because the blades glide smoothly without binding and hold a good cutting edge on account of the high quality tempered steel used in their making. You'll make no mistake in choosing DISSTON & ATKINS saws.

Also a complete line of Brass, Galvanized Iron, Black Iron, Tin, Copper, Zinc, German Silver, Aluminum etc., in our sheet metal Dept. (3rd Floor).

Jno. C. Fischer Company
Main Near Washington UP-TO-THE-MINUTE HARDWARE Washington Near Main

artistic skill. It is often far more profitable to make a judicious use of white space than to crowd the ad full of small-sized type. The truth of this statement can be easily verified by taking an ad which has a few well-placed sentences set in an easily-readable type and placing it alongside of one that is made up of small-sized type set closely together. Which ad is the most inviting? Which one seems to draw the eye toward it the strongest? Is it not true that a person will read the ad with the larger type first, if, in fact, he does not ignore the other entirely?

In the accompanying ad, reprinted from the *Ann Arbor (Michigan) News*, the layout is very good. If it were not for the four large corner posts, it would have perhaps been better to have placed the illustration to one side and to have put the headline at the top. The size of the type in the body could have been made slightly larger, so as to facilitate reading it.

to the exclusion of all others. He dwells upon the low cost of operation of the electric stove and also the fact that the amount of money it



Let Us Help You Put That Thanksgiving Dinner Over in Great Style

Big Aluminum Sale
\$1.19

QUALITY BRAND-ALUMINUM
20 Year Guarantee
"THE WORLD'S BEST"
Extra Heavy Quality in Each Article
First Come, First Served
Be the First

PIONEER HARDWARE CO.
813 Lake Ave. Lake Worth

an attractive method of distributing the illustrations.

The Pioneer Hardware Company

Westinghouse Electric Stoves (Self Regulating)

No burned or scorched food—A real joy for the Housewife—
Costs very little to operate and every cent it costs to operate helps to lower City taxes

See a Westinghouse Electric at

W. J. BACON, Hardware

does cost goes to lowering the taxes which each citizen is required to pay into the city treasury. This sort of an appeal, although an enigma to the electric stove, shows that the advertiser knows how to bring up a

featured a special sale on aluminum ware for \$1.19, and the ad carries seven illustrations of the ware offered.

* * *

It costs money not to advertise.

Tax Reduction in Sight—Confidence Increasing—Inventories Not Generally Excessive.

Buying Is Still Conservative—No Violent Changes in Non-Ferrous Metal Prices.

THE several factors, which bear the greatest influence upon the so-called business cycle and which are favorable to a continuation of good business for the coming year outweigh the unfavorable factors by a considerable degree. Credit resources are large; confidence goes on increasing; a reduction in taxes, although not yet out of the mire of Congressional and party politics, is inevitable in the near future; farm conditions are better than they recently were; inventories are not generally excessive.

Copper.

The copper market swung within a rather wide range this year, reaching 17.50 cents late in March and declining, with only occasional slight recoveries, to a low of 12.50 cents in October. Thence it recovered in November to 13.50 cents, remaining slightly above 13 cents through the first half of December. The copper industry has faced the problem of heavy supplies with an uncertain foreign market, but unsold stocks of copper actually are no larger at the close of 1923 than at the close of 1922.

New supplies of copper this year, including imports, have reached 107,000 tons monthly, against 80,000 tons in the closing months of 1922 and 30,000 tons in the closing months of 1922.

Tin.

The tin market, as usual, pursued an erratic course, ranging between 51.25 cents for spot Straits in March and 37.50 cents in July. The heavy consumption of tin by American industry was the dominant factor in the world tin market, being sufficiently large to enable Far Eastern holders of pooled tin to dispose of about 7,000 tons above current production in the eight months from March to October.

World visible supplies of tin decreased 5,500 tons between December 31 and October 31 to about 19,500 tons on the latter date.

Chicago prices on tin per hundred pounds are: Pig Tin, \$49.37; Bar Tin, \$50.37.

Lead.

Lead prices ranged between 8.62½ cents, New York, in March, and 6 cents in July. Consumption of lead was well maintained through the year.

Early in 1923 the absorption of lead was so heavy here that lead produced in Spain and other continental countries was profitably sold here, despite the duty of 2½ cents, plus transportation costs. Later in the year the New York market was lower in relation to the London market and at times American consumers depended solely upon American production, but at almost all times Mexican ores, carrying 1½ cents duty on the lead content, were entered for consumption here.

Consumption by the paint, lead covered cable and storage battery trades was heavy.

Chicago prices on lead are: American Pig, \$8.50; Bar, \$9.50, per hundred pounds.

Solder.

Chicago warehouse prices on solder are as follows: Warranted, 50-50, \$30.75; Commercial, 45-55, \$30.00, and Plumbers', \$28.75, all per 100 pounds.

Zinc.

The market for prime western zinc has ranged between a high of 8 cents, East St. Louis, in March, and a low of 5.75 cents in July.

Consumption of zinc in this country approximated 500,000 tons in 1923, by far the largest consumption year on record.

Production similarly was heavy, but decreased appreciably in the

latter months of the year. Exports of zinc the first nine months totaled about 36,000 tons.

Tin Plate.

Independent tin plate mills are under the impression that with the turn of the year and the passing of the inventory date their customers will be considerably more ready to take out tin plate. Of late the independents have had difficulty in securing shipping instructions equal to their production, while the production was believed to be necessary to take care of the heavy demand that on all hands is predicted for the new season. The general view has been that all the producing capacity is needed to take care of the requirements and mills think consumers should do a considerable part in carrying stocks, rather than leave this for the mills. Just how much mill stock has accumulated to date is not estimated but it is evident that there is a very considerable volume.

In contrast with the condition mentioned is the freedom with which the two largest can makers, customers of the leading interest, have been taking deliveries. Their policy for the winter has been to accumulate large stocks so as to take care of the spring rush in shipments to canners.

The tin plate market is very firm at the regular price of \$5.50. Concessions from this figure on export and "re-export" plates are smaller than usual.

As January progresses the independent plants are likely to limber up. They have shown an operation lately of approximately 85 per cent of theoretical full, but from the present outlook they are likely to reach 90 per cent before the end of January and about 95 per cent by some time in February.

The leading interest has operated at about 95 per cent for some three weeks prior to last week, while of course it had a light operation last week.

Sheets.

The improvement in the volume of sheet buying that began about a month ago has continued to date, if allowance be made for the temporary quieting effect of the holidays. Last week's bookings of sheet orders were probably considerably less than those of the week before, but there was a whole holiday to come out of the week, as well as the holiday's influence. Normally there is a big drop and when the drop is less than normal it represents a gain from the longer range viewpoint.

Considering December as a whole, there is no doubt that the great majority of mills, probably practically all, had heavier bookings in the month than in November, which was rather a poor month, even though it opened with what is the usually stimulating influence of the leading interest naming prices for first quarter and opening order books for the period.

The November sales had been distinctly poor, as was indicated by the recent report of the sheet association, showing sales for the month at 58.9 per cent of the month's capacity, with mills representing 69 per cent of the total sheet producing capacity of the country. The shipments in November, similarly reported, were 71 per cent, showing that the bookings were five-sixths of the shipments.

A week ago we resumed quoting the general market at the full levels, 3.00 cents for blue annealed, 3.85 cents for black, 5.00 cents for galvanized and 5.35 cents for automobile sheets. Previously we had been quoting a range on black, galvanized and automobile sheets. The market is not absolutely rigid throughout at the regular prices, but the shading is by only a few mills and the tonnage at concessions is only a small percentage of the total turnover.

The experience of the leading in-

terest was that of booking more sheets in December than it shipped, and this showing is of particular importance, seeing that the leading interest's operations were rather heavy, running distinctly above 80 per cent except for last week, when the holiday was quite a disturbing factor. As to the independents, they showed production in November at 67 per cent which was probably made up of considerably above 67 per cent in the fore part of the month and considerably below 67 per cent in the latter part of the month. They have had increasing operations this month, and may have worked up to close to 70 per cent

for the latter part of the month, which would be a substantial gain.

Old Metals.

Wholesale quotations in the Chicago district, which should be considered as nominal, are as follows: Old steel axles, \$17.50 to \$18.00; old iron axles, \$26.00 to \$26.50; steel springs, \$19.25 to \$19.75; No. 1 wrought iron, \$15.50 to \$16.00; No. 1 cast, \$18.00 to \$18.50, all per net tons. Prices for non-ferrous metals are quoted as follows, per pounds: Light copper, 9½ cents; light brass, 6 cents; lead, 4¾ cents; zinc, 4 cents, and cast aluminum, 15 cents.

Pig Iron Output for 1923, 40,000,000 Tons; Operations Divided in Two Major Movements.

Good Iron Business Predicted for 1924—Southern Iron]
Ranges from \$22.50 to \$23.50, Northern, \$21.00 to \$22.00.

PIG iron made history in 1923, with the largest annual production to the present time, over 40,000,000 tons being made. The nearest approach was in 1916, when 39,019,123 tons were produced, says *Iron Trade Review*.

As consumers' stocks were not much larger at the end of the year than at the beginning, although stocks on some makers' yards were heavier, 1923 apparently saw a record in consumption as well, notwithstanding periods when buying was hand-to-mouth. Purchases were carried on quietly except in two major buying movements, one in first quarter for second and third quarter and one in November for first quarter. The first saw a huge tonnage with successive sales at increasing prices, 50 cents to \$1 per ton at a time until the market reached \$31 or higher. The second was inspired after a long, dull period by low prices such as \$18.50 at Buffalo, to meet which valley furnaces went to \$19.50 or \$20, thereby arriving at the price which buyers had mentally pegged as the point from which a turn upward would take place, since they knew such figures in many cases went below pro-

duction costs. More than 1,000,000 tons were booked in November in the Chicago, Buffalo, Cleveland, Pittsburgh and Philadelphia sections.

Consumers were encouraged to buy for first quarter in November since, while the scrap market had advanced, pig iron had declined \$10 or \$12 per ton below the high point of the previous March. While many consumers contributed to the million-ton sales in November, numerous large tonnages were bought by middle interests for speculation. Increases of \$1 or \$2 per ton were brought about in late November, but larger consumers by that time were under contract and only small sales were made in various districts. The year ended with a quiet market and small lot buying, with only an occasional 1,000 to 5,000-ton lot.

Service is not only delivering goods quickly—this is still part of your obligation to the customer—quick delivery is only a small part of real service. Service is the desire to satisfy first, last and always; anything less than that is unfilled obligation.

AREX

Arex Ventilators have the reputation of out-lasting the building in most cases. Supplying such service on your contracts builds a good name for you plus larger profits.



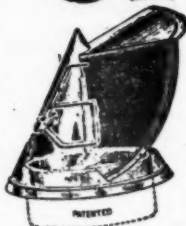
AREX COMPANY

J. C. Keruchen, Pres.

1581 Conway Building, Chicago

THE ORIGINAL SIPHONAGE VENTILATOR

" THE STANDARD "



Ventilator

IS of the rotatable type and swings absolutely free in the slightest draft. The construction is scientifically correct and unusually strong. It works perfectly in all kinds of weather and handles 50% more air than stationary ventilators of equal size. Order from your jobber. Write for our catalog and prices today.

Manufactured by

STANDARD VENTILATOR CO.
LEWISBURG, PA.

**Steel Ceilings
Side Walls and Cornices**

Only first quality material used
Many neat designs of character.

Write today for our complete catalog giving descriptions and prices.

THE W. J. BURTON CO.

Junction Ave. and Federal St. and
436 Penobscot Bldg. Detroit, Michigan

CORTRIGHT METAL SHINGLE

Dipped in Molten Zinc after being cut and formed.

This gives

Cortright Hand Dipped Shingles

a coating on all edges as well as both sides. We will be glad to send our book, "Concerning That Roof."

It describes all the various patterns we make and all the different kinds of materials used.

CORTRIGHT
Philadelphia

METAL ROOFING CO.
Chicago



STANDARD

SINCE 1887



"Don't that set pretty?"

"You bet it does. And in twenty-five years these shingles will be exactly where they are now. This cement is made on a non-mineral base. None of that tar stuff. It's resin. Never shrivels up or hardens. Easy to trowel. Always sticks and never runs. Greatest stuff you ever saw."

For free sample send 10c to cover mailing, to The Clinton Metallic Paint Co., Clinton, N. Y., sole manufacturers. Makers also of Clinton Asbestos Furnace Cement.

The Clinton Metallic Paint Co.
Clinton, N. Y.

Clinton
**Silk Fibre Elastic
Roof Cement**

"Sticks till the Building Falls"

Current Hardware and Metal Prices.

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing Western Hardware and Metal prices corrected weekly.

METALS

FIG IRON.	
Chicago Foundry..	23 00 to 23 50
Southern Pdy. No.	27 01
Lake Sup. Char-	29 04
coal	23 00 to 23 50

FIRST QUALITY BRIGHT TIN PLATES.	
IC 14x20 112 sheets	Per Box \$12 45
IX 14x20	14 05
IXX 14x20 56 sheets	17 57
IXXX 14x20	18 12
IC 14x20	18 65
IX 14x20 112 sheets	27 80
IXX 14x20 56 sheets	29 85
IXXX 14x20	30 80
IC 14x20	30 80
IX 14x20	30 80
IXX 14x20	30 80
IXXX 14x20	30 80

TERRACE PLATES.	
IC 20x28, 40-lb. 112 sheets	Per Box \$35 60
IX 20x28, 40-lb.	38 80
IXX 20x28, 40-lb.	41 80
IXXX 20x28, 40-lb.	44 80
IC 20x28, 40-lb.	44 80
IX 20x28, 40-lb.	44 80
IXX 20x28, 40-lb.	44 80
IXXX 20x28, 40-lb.	44 80

COKE PLATES.	
Cokes, 80 lbs., base, 20x28	\$12 85
Cokes, 90 lbs., base, 20x28	14 10
Cokes, 100 lbs., base, 20x28	14 45
Cokes, 107 lbs., base, IC	14 85
Cokes, 135 lbs., base, IX	17 40
Cokes, 155 lbs., base, 56 sheets	9 75
Cokes, 175 lbs., base, 56 sheets	10 65
Cokes, 195 lbs., base, 56 sheets	11 70

BLUE ANNEALED SHEETS.	
Base	Per 100 lbs. \$3 50

ONE PASS COLD ROLLED BLACK.	
No. 18-20	per 100 lbs. \$4 50
No. 22-24	per 100 lbs. 4 55
No. 26	per 100 lbs. 4 60
No. 27	per 100 lbs. 4 65
No. 28	per 100 lbs. 4 70
No. 29	per 100 lbs. 4 75

GALVANIZED.	
No. 16	per 100 lbs. \$5 10
No. 18-20	per 100 lbs. 5 25
No. 22-24	per 100 lbs. 5 40
No. 26	per 100 lbs. 5 55
No. 27	per 100 lbs. 5 70
No. 28	per 100 lbs. 5 85
No. 29	per 100 lbs. 6 35

BAR SOLDER.	
Warranted.	
50-50	per 100 lbs. 30 75
Commercial.	
45-55	per 100 lbs. 30 00
Plumbers	per 100 lbs. 28 75

ZINC.	
In Slabs	7 28

SHEET ZINC.	
Cask lots, stock, 100 lbs.	11 00
Less than cask lots, 100 lbs.	11 50

BRASS.	
Sheets, Chicago base	19% c
Mill Base	17% c
Tubing, brazed, base	25% c
Wire, base	18% c

COPPER.	
Sheets, Chicago, base	20% c
Mill base	20c
Tubing, seamless, base	34c
Wire, No. 9 & 10 B. & S. Ga.	
Wire, No. 11, B. & S. Ga.	17% c

LEAD.	
American Pig	8 50
Bar	9 50

Sheet.	
Full Coils	per 100 lbs. 10 75
Cut Coils	per 100 lbs. 11 75

TIN.	
Pig Tin	per 100 lbs. 40 37
Bar Tin	per 100 lbs. 50 37

HARDWARE, SHEET METAL SUPPLIES, WARM AIR HEATER FITTINGS AND ACCESSORIES.

ADZES.	
Coppers'	Net
Barton's	Net
White's	Net

AMMUNITION.	
Shells, Loaded, Peters.	
Loaded with Black Powder 18%	
Loaded with Smokeless Powder	18%
Winchester.	
Smokeless Repeater	
Grade	20 & 4%
Smokeless Leader	
Grade	20 & 4%
Black Powder	20 & 4%
U. M. C.	
Nitro Club	20 & 4%
Arrow	20 & 4%
New Club	20 & 4%
Gun Wads—per 1000.	
Winchester 7-8 gauge 10&7 1/4%	
" 9-10 gauge 10&7 1/4%	
" 11-28 gauge 10&7 1/4%	

ASBESTOS.	
Paper up to 1/16	6c per lb.
Rollboard	6 1/2 c per lb.
Millboard 3/32 to 1/4	6c per lb.
Corrugated Paper (350 sq. ft. to roll)	\$4.00 per roll

AUGERS.	
Boring Machine	40&10%
Carpenter's Nut	50%
Hollow.	
Stearns, No. 4, doz.	\$11 50
Post Hole.	
Iwan's Post Hole and Well 35%	
Vaughan's, 4 to 9 in.	\$15 60

AXES.	
First Quality, Single	
Bitted (unhandled, 3 to 4 lb., per doz.	\$14 00
Good Quality, Single	
Bitted, same weight, per doz.	13 00

BARS, CROW.	
Steel, 4 ft., 10 lb.	\$ 20
Steel, 5 ft., 18 lb.	1 40
Pinch bar, 5 1/2 ft., 24 lb.	1 60

BARS, WRECKING.	
V. & B. No. 12	\$0 34
V. & B. No. 24	0 43
V. & B. No. 30	0 57
V. & B. No. 36	0 48
V. & B. No. 320	0 63

BITS.	
All Vaughan and Bushnell.	
Screw Driver, No. 30, each \$	27
Screw Driver, No. 1, each	16
Reamer, No. 80, each ..	41
Reamer, No. 100, each ..	41
Countersink, No. 13, each ..	20
Countersink, No. 14-15 each	27

BLADES, SAW.	
Wood.	
Atkins 30-in.	
Nos.	8 40 26
	\$8 90 \$9 45 \$5 40

BLOCKS.	
Wooden	45%
Patent	45%

BLOW TORCHES (See Firepots).	
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BOARDS.	
Stove.	
Cy. stal, 22"	33 00

Wash.	
No. 769, Banner Globe (single)	per doz. \$5 35
No. 652, Banner Globe (single)	per doz. 6 75
No. 301, Brass King	per doz. 8 35
No. 340, Single—Plain	per doz. 4 25

BOLTS.	
Carriage, Machine, etc.	
Carriage, cut thread, 1/2 in. and sizes smaller and shorter	50%
Carriage sizes, larger and smaller and shorter	50-10%
Machine, 1/2 in. and sizes smaller and shorter	50-5%
Machine, sizes larger and longer than 1/2 in.	50-10-5%
Stove	70-10%

BRACES, RATCHET.	
V. & B. No. 444 8 in.	\$4 54
V. & B. No. 323 8 in.	3 39
V. & B. No. 111 8 in.	3 85
V. & B. No. 11 8 in.	3 02

BRUSHES.	
Hot Air Pipe Cleaning.	
Bristle, with handle, each \$0 35	
Fine Cleaning.	
Steel Only, each	\$1 25

BURRS.	
Copper Burrs only	40%

BUTTS.	
Steel, antique copper or dull brass finish—case lots—3 1/2 x 3 1/2—per dozen pairs	\$3 48
4 x 4	4 74

Heavy Bevel steel inside sets, case lots—	
.....per dozen sets	\$ 90
Steel bit keyed front door sets, each	2 00
Wrought brass bit keyed front door sets, each	4 00
Cylinder front door sets, each	8 50

CEMENT, FURNACE.	
American Seal, 5 lb. cans, net \$	45
" 10 lb. cans, "	90
" 25 lb. cans, "	2 00
Asbestos, 5 lb. cans	45
Pecora	per 100 lbs. 7 51

CHAINS.	
Sher. Steel Safety Chain.	
500-ft. coil, per ft.02
100 to 500 ft., per ft.03 1/2
Less than 100 ft., per ft.08
Iron Jack Chain.	
Box (12 yds.)45

CHIMNEY TOPS.	
Iwan's Complete Rev. & Vent.	30%
Iwan's Iron Mountain only ..	35%
Standard	30 to 40%

CHISELS.	
Cold.	
V. & B. No. 25, 1/4 in., each	\$0 26
V. & B. No. 25, 1/2 in., each	41

Diamond Point.	
V. & B. No. 55, 1/4 in.	0 31
V. & B. No. 55, 1/2 in.	0 43
Firmer Bevelled	
Round Nose.	
V. & B. No. 65, 1/4 in.	0 29
V. & B. No. 65, 1/2 in.	0 40

Socket Firmer.	
Cape.	
V. & B. No. 50, 1/4 in.	0 31
V. & B. No. 50, 1/2 in.	0 57

CHUCKS, DRILL.	
Goodell's, for Goodell's Screw Drivers	List less 35-40%
Yankee, for Yankee Screw Drivers	\$6 00

CLAMPS.	
Adjustable.	
No. 100, Door (Stearns) doz.	\$22 00

Carpenters'.	
Steel Bar	List price plus 20%

CLINKER TONGS	
Front Rank, each	\$1 75
Per doz.	1 85

CLIPS.	
Damper.	
Acme, with tall pieces, per doz.	\$1 31
Non Rivet tall pieces, per doz.	31

COPPERS—Soldering.	
Painted Roofing.	
3 lb. and heavier	per lb. 40c
2 1/2 lb.	" 40c
2 lb.	" 40c
1 1/2 lb.	" 40c
1 lb.	" 40c

CORD.	
No. 7 Std. per doz. banks ..	\$11 00
No. 8 " " " " ..	12 60

CORNICE BRAKES.	
Chicago Steel Bending.	
No. 1 to 6 B.	10%

COUPLINGS, HOSE.	
Brass	per doz. \$2 31

CUT-OFFS	
Kuehn's Korrekt Kuteffs:	
Galv., plain, round or cor. rd	
Standard gauge	40%
26 gauge	10%

DAMPERS.	
"Yankee" Hot Air.	
7 inch, each 20c, doz.	\$1 74
8 " " 25c, "	2 40
9 " " 30c, "	2 75
10 " " 32c, "	3 00

Smoke Pipe.	
7 inch, each	\$ 31
8 " "	40
9 " "	50
10 " "	60
12 " "	90

Reversible Check.	
8 inch, each	\$1 50
9 " "	1 70

DIGGERS.	
Post Hole.	
Iwan's Split Handle (Bureka) ..	
4-ft. Handle	per doz. \$14 00
7-ft. Handle	per doz. 36 00
Iwan's Hercules pattern, per doz.	14 90

DRILLS.	
V. & B. Star, 12-inch Length.	
1/4, 5/16 and 3/8, each	21
1/2, each	26
1, each	54
1 1/2, each	81
V. & B. Star, 18-inch Length.	
5/16 and 3/8, each	33
1/2, each	45
1, each	69
1 1/2, each	1 04

EAVES TROUGH.	
Milcor.	
Galv., Crimpedge, crated ..	75%

ELBOWS—Conductor Pipe.	
Milcor	
Galv., plain or corrugated, round flat	
Crimp, Std. gauge	65%
26 Gauge	40%
24 Gauge	10%

Square Corrugated.	
Milcor	
Standard gauge	45%
26 gauge	30%

Fertico Elbows.	
Standard Gauge Conductor Pipe, plain or corrugated.	
Not nested	70 & 5%
Nested solid	70 & 5%

ELBOWS—Steel Pipe.	
1-piece Corrugated, Uniform.	
5-inch	per doz. \$1 40
6-inch	1 60
7-inch	2 10
Special Corrugated.	
4-inch	per doz. \$1 40
7-inch	1 70

YES, you can get as good roofing tin today as you did in the old days if you demand Target-and-Arrow brand—formerly known as “Taylor’s Old Style.” It is the same kind of handmade tinplate we have been selling for nearly three-quarters of a century.

Today we alone employ the old-time Welsh method of hand-dipping. As a consequence it costs more than other kinds—hence if your specifications allow the substitution of any other brand, you are not likely to get Target-and-Arrow.

N. & G. TAYLOR COMPANY

PHILADELPHIA

H. N. TAYLOR, President

Established in the U. S. A. in 1810 by William, George and Tracy Taylor, descendants of Major John Hanbury, who introduced the art of tinning into Wales in 1703.

Everything Used in Sheet Metal Work



A brand almost as old as the tinplate industry in this country—it identifies a product that has stood the test of time.

Supplied in IC and IX thickness; 112 Sheets per case; 20x28; the IC gauge will weigh about 246 lbs. net.

Since 1872

We offer the trade a thoroughly dependable service based on over 50 years of experience in supplying the needs of Sheet Metal Workers and Furnacemen. Our constant growth—an ever-increasing list of satisfied customers—testify to the quality of Osborn Products.

Catalog No. 24, ready for distribution very soon, will be sent at your request.

The J. M. & L. A. Osborn Co.
CLEVELAND OHIO

Uniform, Collar Adjustable.	
6-inch	Doz. \$2 00
8-inch	Doz. \$2 19
7-inch	Doz. \$2 60

WOOD FACES—50% off list.

FENCE.	
Field Fence	60%
Lawn	53%

FILES AND RASPS.

Heller's (American)	65-5%
American	65-5%
Archie	60 & 10%
Black Diamond	50-10%
Eagle	60-10%
Great Western	60-10%
Kearney & Foot	60-10%
McClellan	60-10%
Nicholson	50-14%
Simonds	60%

FIRE POTS.

Ashton Mfg. Co.	
Complete line	
Firepots and Torches	52%
Otto Bernz Co.	

No. 1 Furn. Gasoline with large shield, 1 gal.	\$ 6 75
No. 2 Furn. Kerosene, 1 gal.	15 12
No. 10 Brasier, Kerosene or Gasoline, 10 gals.	47 52
No. 5 Torch, Gasoline or Kerosene, 1 pt.	7 92
No. 83 Torch, Gasoline, 1 quart	5 40
No. 86 Torch, Gasoline, 1 pt.	4 05

Clayton & Lambert's.	
East of west boundary line of Province of Manitoba, Canada.	
No. Dakota, So. Dakota, Nebraska, Kansas, Oklahoma, Amarillo, San Angelo and Laredo, Texas	52%
West of above boundary line	48%

Geo. W. Diner Mfg. Co.	Es.
No. 62 Gasoline Torch, 1 qt.	\$ 5 55
No. 6350, Kerosene or Gasoline Torch, 1 qt.	7 50
No. 10 Tinner's Furn.	
Square tank, 1 gal.	12 60
No. 15 Tinner's Furn.	
Round tank, 1 gal.	12 00
No. 21 Gas Soldering Furnace	3 50
No. 110 Automatic Gas Soldering Furnace	10 50

Double Blast Mfg. Co.	
Gasoline, Nos. 25 and 35	40%
Quick Meal Stove Co.	
Vesuvius, F.O.B. St. Louis	30%
(Extra Disc. for large quantities)	

Chas. A. Hones, Inc.	
Buzzer No. 1	\$ 9 00
" " 2	12 00
" " 22	13 50
" " 42	15 00
" " 43	19 00

FREEZERS—ICE CREAM.

Pearless and Alaska	
1 quart	\$2 95
2 quart	3 45
3 quart	4 10
White Mountain	
1 quart	\$2 50
2 quart	4 00
3 quart	5 70

GALVANIZED WARE.

Pails (Competition), 3 qt.	\$1 85
10-qt.	2 10
12-qt.	2 30
14-qt.	2 57

Wash tubs, No. 1	\$6 25
No. 2	7 00
No. 3	8 25

GARAGE DOOR HARDWARE.

Stanley	All net
---------	---------

GAUGES.

Marking, Mortise, etc.	Net
Wire.	
Diston's	25%

GIMLETS.

Discount	65% and 10%
----------	-------------

GLASS.

Single Strength, A and B.	all sizes \$3 & 35%
Double Strength, A, all sizes	84%

GREASE, AXLE.

Fraser's	
1-lb. tins, 25 to case.	
per case	\$ 4 75
2-lb. tins, 24 to case.	
per case	7 30
5-lb. tins, 13 to case.	
per case	7 20
10-lb. tins, per dozen	10 40
15-lb. tins, per dozen	13 50
25-lb. tins, per dozen	19 50

HAMMERS, HANDLED.

All V. and B.	Each, net
Blacksmiths' Hand, No. 0,	26-oz.
Engineers' No. 1, 35-oz.	1 00

Farrier's, No. 7, 7-oz.	92
Machinists', No. 1, 7-oz.	78

Nail.	
Vanadium, No. 41, 28-oz.	1 59
each	
Vanadium, No. 41½, 16-oz.	1 59
each	
V. & B., No. 11½, 16-oz.	1 01
each	
Garden City, No. 11¼, 16-oz., each	75

Tinner's Riveting, No. 1, 8-oz., each	79
Shoe, Steel, No. 1, 13-oz., each	65
Tack.	
Magnetic.	
No. 5, 4-oz., each	81

HAMMERS, HEAVY.

Farrier's, No. 10, 10-oz.	\$1 01
---------------------------	--------

HANDLES.

Axe.	
Hickory, No. 1, per doz.	4 00
Hickory, No. 2, per doz.	3 00
1st quality, second growth	6 00
Special white, 2nd growth	6 00

Chisel.	
Hickory, Tanged, Firmer	
Assorted, per doz.	55c
Hickory, Socket, Firmer,	
Assorted, per doz.	70c
File, per doz.	\$1 20

Hammer and Hatchet.	
No. 1 per doz.	\$0 90
Second growth hickory,	
per doz.	1 50

Soldering.	
Per doz.	\$3 40

HANGERS.

Conductor Pipe.	
Milcor Perfection Wire	25%

Eaves Trough.	
Steel hangers	20%
Triple Twist wire	10%
Milcor Eclipse Wire	20%
Milcor Triplex Wire	15%
Milcor Milwaukee Extension	15%
Milcor Steel (galv. after forming) List plus	12½%
Milcor Selflock E. T. Wire,	
List plus	40%

HASPS.

Hinge, Wrought, with staples, Net	
-----------------------------------	--

HATCHETS.

V. and B. Supersteel.	Each
Broad, No. 1, 24-oz.	\$1 42
Half, No. 1, 15-oz.	1 25
Half, No. 3, 27-oz.	1 37
Claw, No. 1, 19-oz.	1 31
Picoring, No. 1, 20-oz.	1 43
Shingling, No. 1, 17-oz.	1 20
Lathing, No. 1, 14-oz.	1 20
Lathing, No. 2, 17-oz.	1 25

Vanadium Steel.	
Half, No. 62, 22-oz.	\$1 82
Underhill Pattern Lathing,	
3 row, 19-oz.	2 29

HINGES.

Heavy Strap, in Bundles.	
4 inch, dozen prs.	\$1 12
5 " " "	1 57
6 " " "	1 93
8 " " "	2 21

Extra Heavy T in Bundles.	
4 inch, dozen prs.	\$1 74
5 " " "	1 85
6 " " "	2 21
8 " " "	2 59

HOES.

Garden	Net
--------	-----

HOOKS.

Box.	
V. and B. No. 9, each	\$0 26

Conductor.	
Milcor	
"Direct Drive" Wrought	15%
Iron for wood or brick	

Cotton.	
V. and B. No. 8, each	34

Hay.	
V. and B. No. 1, each	26

Bar Meat.

V. and B. No. 26, ¾",	09
each	
V. and B. No. 28, ¾",	16
each	

Screw Meat.

V. and B. No. 2, per gro.	6 50
Butchers' "S."	
V. and B. No. 6, each	08
V. and B. No. 8, each	11

HOSE.

Per. Ft.	
¾-in. 2 ply molded, ¾" c to 1½" c	12½c
¾-in. cord	8½c to 10c
¾-in. wrapped	13½c

HUMIDIFIERS.

"Front-Range" Automatic.	
In single lots	50%
In lots of 10 or more	50-55%
In lots of 25 or more	50-100%
Vapor pans, etc., each	50%

IRONS.

Sad.	
Genuine Mrs. Potts, nickel plated, per set	\$1 55
Asbestos No. 70, per set	2 10
Asbestos No. 100, per set	2 30
E. C. Stearns.	
No. OA Corner, doz. sets	\$2 50
No. OB	2 75

KNIVES.

Butcher.	
Beechwood Handles, 6-inch blade	25%
Beechwood Handles, 7-inch blade	25%
Beechwood Handles, 8-inch blade	25%
Cooper's Hoop	25%

Drawing.	
Standard	25%
Adjustable	25%
Barton's Carpenters'	25%

Hay.	
Iwan's Solid Socket	25%
Heath's	25%
Iwan's Sickle Edge	25%
Iwan's Imp'd Serrated	25%

Hedge.	
Challenge	25%
Diston's No. 1	25%

Putty.	
Common	25%
Lander's	25%

Scraping.	
Beech Handles	25%
Lander's	25%

KNOBS.

Door.	
Mineral	per doz \$2 00
Porcelain	" 2 00
Jet	" 2 00

LADDERS.

Step.	
Common, per ft.	28c
Common, with Shelf, add 10c	
IXL	34c
Challenge, 6 to 9 ft.	55c
10 to 16 ft.	60c
Kant-Break, per lineal ft.	75c

LANTERNS.

Monarch tin, hot blast	\$ 8 25
Diets No. 2, cold blast	13 00
Best tubular	8 25
Competition lanterns No. 0	
tubular	6 90

LAWN MOWERS.

12-inch	\$5 20
16-inch	5 85

Ball Bearing.	
4 blade, adjustable bearing.	
14"	\$7 50
16"	7 80

LEATHER BELTING.

From No. 1 Oak Tanned Butts.	
Extra heavy, 18-oz.	35%
Heavy, 16-oz.	40%
Medium, 14½-oz.	40%
Light, 13-oz.	50%

LEATHER LACING.

Cut, strictly No. 1	45%
---------------------	-----

LEVELS.

Diston, No. 28 Asst.	\$22 00
No. 15, 20 in., each	1 32
No. 22, 24 in., each	2 40
Shafting, 6 in.	19 80
6 in. gr. glass	24 20
No. 1 Asst.	5 78
No. 2 Asst.	12 40
24-28 in., each	1 02
28-30 in., each	1 08

LIFTERS.

Stove Cover.	
Coppered	per gro. \$6 00
Alaska	" 4 75

LOCKS.

Horn Door.	
No. 60 Stearn's	per doz. \$11 00
No. 80	" 30 00

MALLET.

Carpenters'.	
Fibre Head No. 2, per doz.	\$12 00
No. 3	15 50
No. 3½	30 50

Round Hickory	
per doz.	\$3 00—5 00

Tinner's.	
Hickory	per doz. \$2 35

MATS.

Door.	
National Rigid	5 & 10 & 5%
Acme Steel Flexible	50%

MITRES.

Galvanized steel mitres, and caps, end pieces, outlets	20%
Milcor	
Galv. one piece stamped	40%

MOPS.

Cotton, Star (Cut Ends).	
Pounds 12' 15' 18' 24'-3-oz.	
Per doz. \$4 00 4 35 5 50 7 00	
Enterprise	16%
Parker	50 & 5%

NAILS.

Cut Steel	\$4 70
Cut Iron	4 70
Wire.	
Common	3 80
Cement Coated	3 60

NETTING, POULTRY.

Galvanized before weaving	45-10%
Galvanized after weaving	45%

NIPPERS.

Nail Cutting.	
V. & B. No. 30	75c
Double Duty.	
V. & B. No. 60	75c

Hoof.	
Heller's	40 & 10%
V. & B. No. 52, each	\$3 35

NOZZLES.

Hose.	
Magic	per doz. \$9 80
Diamond	" 5 75

OILERS.

Chase Pattern.	
Brass and Copper	10%
Zinc Plated	40 & 5%

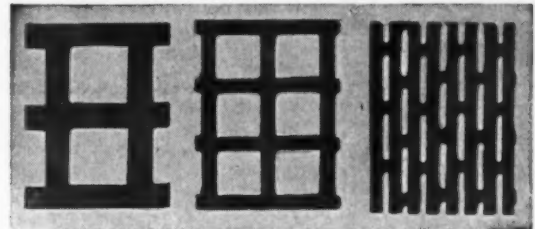
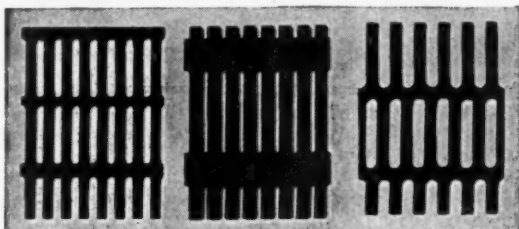
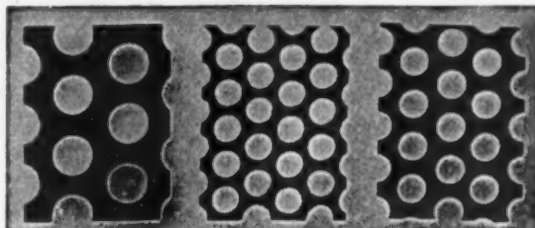
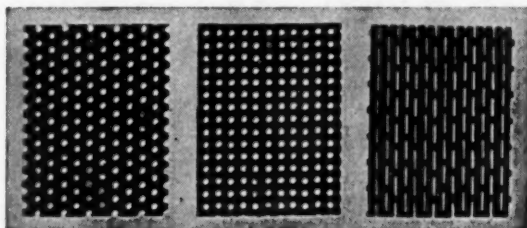
Railroad.	
Brass	20 & 5%
Coppered	50 & 5%

Steel.	
Copper Plated	70 & 5%

OPENERS.

Delmonico	per doz. \$1 30
Never Slip	" 60
Crute.	
V. & B.	per doz. \$7 25—11 00

PERFORATED METALS



PERFORATED STEEL — COPPER — BRASS — BRONZE — ALUMINUM — ZINC — TIN PLATE
and all other metals

For Screening and Sizing STONE—GRAVEL—SAND—COAL—all minerals—GRAIN and ANYTHING TO BE SCREENED

For DRYING FLOORS AND DECKS
VENTILATORS—DRAINS, ETC.

Perforated Tin and
Brass always in stock

GRILLES—REGISTER FACES
and ORNAMENTAL SCREENS

THE HARRINGTON & KING PERFORATING CO.

5649 FILLMORE STREET, CHICAGO, ILLINOIS, U. S. A.

New York Office: 114 Liberty Street

Quality & Beauty IN ART METAL CEILINGS AND SIDE WALLS

QUALITY—only first quality material is used in making FRIEDLEY-VOSHARDT ART METAL CEILINGS AND SIDE WALLS.

BEAUTY—is necessary for the complete and lasting satisfaction of your customers.

Having one of the finest equipped sheet metal plants in the country and employing only skilled workers enables us to serve you with **QUALITY** goods having the **BEST DESIGNS**.

Write Today for Catalog No. 33

FRIEDLEY-VOSHARDT Co.

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FACTORY
761-771 Mather St.

CHICAGO, ILLINOIS

PATTERNS—CHARTS

Elbow Patterns, Patterns for complete line of Tinware, Skylight Patterns and Block Letter and Figuring Patterns, Furnace Boot, Ventilator, Register Box, Liquid Measure and other Patterns, all listed and described in our 10-page book catalog.

Write for Your Copy Today

AMERICAN ARTISAN AND HARDWARE RECORD
630 South Michigan Avenue Chicago, Ill.

SOFT DURABLE WORKABLE

*These qualities
combine to make*

Inland Copper Alloy Sheets

*The favorite
in the Sheet Metal Shop*

INLAND STEEL COMPANY

38 South Dearborn St., Chicago

Works:

Indiana Harbor, Ind.
Chicago Heights, Ill.

Branch Offices
Milwaukee St. Louis
St. Paul

PAIS.	
Cream.	
14-qt. without gauge.	per doz. \$9 50
18-qt. without gauge.	per doz. 11 00
20-qt. without gauge.	per doz. 11 75

Sap.	
10-qt., IC Tin.	per doz. \$4 00
12-qt., IC Tin.	per doz. 5 50

Block.	
Galv. qts. 14 16 18 20	
Per doz. \$9 75 10 75 12 75 14 50	

Water.	
Galvanized qts. 10 12 14	
Per doz. \$5 75 6 50 7 25	

PASTE	
Asbestos Dry Paste:	
100-lb. barrel	\$15 00
100-lb. pail	3 00
10-lb. bag	1 00
5-lb. bag	55
2 1/2-lb. cartons	30

PINCHERS.	
All V. & B.	
Carpenters', cast steel,	
No. 6	8 10 12
Each \$0 43 \$0 52 \$0 61 \$0 71	
Blacksmiths', No. 10	\$0 61

PIPE.	
Conductor.	
"Interlock" Galvanized.	
Crated and nested (all	
gauges)	60-20%
Crated and not nested	
(all gauges)	60-15%
Square Corrugated A and B and	
Octagon.	
25 Gauge	60-10%
25 "	60-10%
26 "	60-10%
24 "	60-10%

"Interlock."	
Crated and nested (all	
gauges)	60-20%
Prices for Galvanized Toncan	
Metal, Genuine O. H. Iron, Lyon-	
more Metal and Keystone C. B.	
on application.	

Stove.	
25 gauge, 5 inch E. C.	
nested	\$17 00
25 gauge, 6 inch E. C.	
nested	18 00
25 gauge, 7 inch E. C.	
nested	19 00
25 gauge, 5 inch E. C.	
nested	15 00
25 gauge, 6 inch E. C.	
nested	16 00
25 gauge, 7 inch E. C.	
nested	18 00
30 gauge, 5 inch E. C.	
nested	13 00
30 gauge, 6 inch E. C.	
nested	14 00
30 gauge, 7 inch E. C.	
nested	16 00
T-Joint Made up,	
5-inch.	per 100 \$40 00

Furnace Pipe.	
Double Wall Pipe and	
Fittings	33 1/2%
Single Wall Pipe, Round	
Pipe Fittings	33 1/2%
Galvanized and Back	
Iron Pipe, Shoes, etc.	33 1/2%
Millor Galvanized	40%

PLANES.	
Stanley Iron Bench	Net

PLIERS.	
(V. & B.)	
Nut, No. 3, each	\$2 60
" No. 5, each	64
" No. 25, each	69
Gag, No. 7, each	55
" No. 8, each	61
" No. 12, each	87
Lining or Crimping.	
No. 25, each	64
Button's Pattern.	
No. 6 each	61
No. 8 each	74
Double Duty, No. 105	50

POUNTS, GLAZERS'.	
No. 1, 2 and 3.	per doz. pkgs. 65c

POKERS, STOVE.	
Wrt Steel, str't or bent.	
per doz.	\$0 75
Nickel Plated, coil	
handles	1 10

POKERS, FURNACE.	
Each	\$0 50

PULLEYS.	
Furnace Tackle.	per doz. \$0 60
Per gross	6 00
" Screw (en-	
cased)	per doz. \$0 85

Ventilating Register.	
Per gross	\$9 00
Small, per pair	0 30
Large, per pair	0 50

PUNCHES.	
Machine.	Each.
V. & B., No. 11-13, 1 1/2 x 6.	\$0 19
V. & B., No. 90, 1/2 x 9.	27
V. & B., No. 10, 1/2 x 10.	29
V. & B., No. 1-6, 1/2 x 6.	12

Center.	
V. & B., No. 50, 1/2 x 4.	\$0 14

Belt.	
V. & B., No. 101-103.	\$0 24
V. & B., No. 108-109.	33
V. & B., No. 25, ass't.	3 30

Samson Line.	
No. 1 Hand	Doz. lots or less 40%
No. 2 Hand	3 doz. lots 40%
No. 4 Hand	6 doz. lots or more 50%

No. 3 Bench	
Less than doz.	25%
Doz. lots or more	40%

Extra Punches and Dies for Samson:	
No. 1 Hand	Less than doz. lots 25%
No. 2 Hand	Doz. lots 33 1/2%
No. 4 Hand	3 doz. lots 40%
No. 3 Bench	6 doz. lots or more 40 & 10%

PUTTY.	
Commercial Putty, 100-lb.	
kits	\$3 55

QUADRANTS.	
Malleable Iron Damper.	10%

FLOOR REGISTERS AND BORDERS.	
------------------------------	--

Cast Iron	20%
Steel and Semi-Steel	33 1/2%
Baseboard	33 1/2%
Adjustable Ceiling Ventilators	33 1/2%
Register Faces—Cast and Steel	
Japanned, Bronzed and Plated.	
4x6 to 14x14	33 1/2%
Large Register Faces—Cast.	
14x14 to 38x42	60%
Large Register Faces—Steel.	
14x14 to 38x42	65%

ROOFING.	
Per Square	
Best grade, slate surf. prep'd	\$1 85
Best talc surfaced	2 20
Medium talc surfaced	1 50
Light talc surfaced	95
Red Rosin Sheeting, per ton	\$72 00

ROPE.	
Cotton.	
Shal.	
1st Quality, base	13 1/2%
No. 2	12 1/2%
Manila.	
1st Quality standard brands	15 1/2%
No. 2	14 1/2%
Hardware Grade, per lb.	12 1/2%

SAWS.	
Butchers'.	
Atkins No. 2, 14-in.	\$12 75
" No. 2, 18-in.	14 30
" No. 7, 16-in.	15 85
" No. 2, 22-in.	15 92
" No. 7, 20-in.	18 05
" No. 7, 24-in.	20 20
" No. 7, 28-in.	22 35

Compass.	
Atkins No. 2, 10-in.	\$ 5 45
" No. 10, 10-in.	5 60
" Blades, No. 2, 10-in.	3 25
" No. 2, 10-in.	3 30

Cross-Cut.	
Atkins No. 221, 4 ft.	\$3 03
" No. 221, 6-ft.	4 45
" No. 221, 8-ft.	6 07

Hand.	
Copper Burrs only	30%
" No. 95, 20-in.	21 70

Hand and Rip.	
Atkins No. 54, 20-in.	\$19 50
" No. 54, 26-in.	24 40
" No. 53, 16-in.	18 10
" No. 53, 20-in.	22 90
" No. 53, 24-in.	26 60
" No. 53, 28-in.	31 45
" No. 53, 30-in.	34 15

Keyhole.	
Atkins No. 1, complete	\$3 10
" No. 2, complete	3 70

Miter Box.	
Atkins No. 1, 4x20	\$32 65
" No. 1, 5x22	38 00
" No. 1, 6x22	42 20

Pruning.	
Atkins No. 20, 12-in.	\$ 8 45
" No. 10, 16-in.	13 15

Wood.	
Atkins No. 202	\$ 7 19
" No. 318	8 75
" No. 906	15 50
" No. 1509	16 55

SCRAPERS.	
Box.	
No. 6, six blades each	25c
Hog.	
No. 6, each	25c
Floor (Stearns).	
No. 10, each	\$11 50

SCREEN DOOR HINGES.	
Cast Iron	gross \$13 00
Steel	5 50

SCREWS.	
Wood.	
F. H. Bright	80%
R. H. Blued	75%
F. H. Jap'd	74%
F. H. Brass	76%
R. H. Brass	74%
Sheet Metal.	
No. 7, 1/4 x 1/4, per gross	\$0 55
No. 10, 1/4 x 1/4, per gross	75
No. 14, 1/4 x 1/4, per gross	90

SCREW DRIVERS.	
Uncle Sam Standard Head.	
3 inches, each	\$ 45
5 inches, each	52
8 inches, each	68
12 inches, each	1 02

SETS.	
Uncle Sam Insulated Head.	
3 inches, each	\$ 49
5 inches, each	57
8 inches, each	76
12 inches, each	1 14

Nail.	
V. & B.	
No. 100, in cardboard boxes	\$1 55
No. 100, in wooden boxes	1 59
No. 30, assorted	39
No. 5, in cardboard boxes	1 23
No. 5, in wooden boxes	1 30

River.	
V. & B.	
Farmers'	\$0 19
Tinners' 3-4	0 40
" 00-0	0 00

Saw.	
Atkins No. 10	per doz. \$3 30
" No. 12	6 30

SHEARS.	
Nickel Plated, Straight, 6"	\$12 30
" " " 7"	14 31
" " " 8"	16 30
Japanned, Straight	11 00
" " " 7"	12 40
" " " 8"	13 30

SHEARS, TINNERS' & MACHINISTS'.	
Viking	\$22 00

Lennox Throatless.	
No. 18	35%
Shear blades	10%
(f.o.b. Marshalltown, Iowa.)	

Peerless Steel Squaring.	
Foot Power.	
No. 1—30", 18 ga. cap.	15%
No. 2—36", 18 ga. cap.	15%
No. 4—52", 18 ga. cap.	15%
No. 10—120", 22 ga. cap.	15%
No. 4A—52", 16 ga. cap.	15%

Cast Iron Foot Power.	
No. 01, 30", 18 ga. cap.	15%

Power Driven.	
(No. 100 Series, 2 Shaft Drive.)	
No. 142—42", 18 ga. cap.	15%
(No. 200 Series, 2 Shaft Underneath Drive.)	
No. 242—42", 14 ga. cap.	15%
(No. 300 Series, 3 Shaft Underneath Drive.)	
No. 342—42", 10 ga. cap.	15%
No. 372—72", 10 ga. cap.	15%
(No. 500 Series, 3 Shaft Underneath Drive.)	
No. 596—96", 10 ga. cap.	15%
(No. 600 Series, 3 Shaft Underneath Drive.)	
No. 6120—120", 3/16" cap.	15%

SHINGLES.	
Per Square	
Zinc (Illinois)	\$18 00

SHOES.	
Wilcor.	
Galv. Std. Gauge, Plain or	
corr. round flat crimp	65%
25 gauge round flat crimp	40%
24 gauge round flat crimp	10%
Conductor	65%

SHOVELS AND SPADES.	
Coal.	
Hubbard's.	
No. A B C D	
1 \$16 00 15 10 14 45 13 70	
2 16 35 15 60 14 85 14 10	
3 16 75 16 00 16 25 14 40	
4 17 10 16 35 16 60 14 85	

Post Drains & Ditching.	
Hubbard's.	
Size A B C	
14" \$17 15 \$16 40 \$15 00	
16" 17 50 16 75 16 00	
18" 17 85 17 10 16 85	
20" 18 20 17 45 16 70	
22" 18 55 17 80 17 05	
Alaska Steel.	
D-Handle	per doz. \$2 50
Long Handle	3 00

SIFTERS.	
Genuine Hunters, doz.	\$2 50

SKATES.	
Ice, Men's and Boys'.	
Key Clamp—rocker—bright	
finish	\$ 75
Key Clamp—rocker—nickel	
finish	1 10
Key Clamp—rocker—pol.	
steel	1 35
Key Clamp—Hockey	1 35
Skate outfits	4 75
Women's and Girls'.	
1/4 Key Clamp—rocker	\$1 31
1/4 Key Clamp—hockey	1 35
Ice Skate outfit	5 00
Roller.	
Ball Bearing—Boys'	\$1 55
Ball Bearing—Girls'	1 65



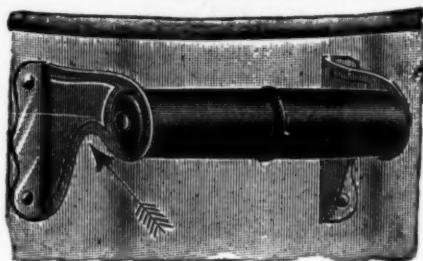
No. 208 Torch
Ask for Latest Price

TORCH TROUBLES COST MONEY

You can save time and fuel by using good Torches that function properly. No. 208 Improved Double Needle Torch is the latest and best and overcomes 60 percent of all Burner troubles. Over 300 degrees more heat is produced burning either gasoline or kerosene. Both needles are blunt, which prevents injuring the gas orifice. Upper Needle cleans, lower regulates the flame. Jobbers supply at factory prices. Get a catalogue.

CLAYTON & LAMBERT MFG. CO.
10635 Knodell Ave., DETROIT, MICH., U.S.A.

KEYSTONE BOILER HANDLES



WE make a complete line of Boiler Handles. Also handles for Boiler Covers. Cut shows No. 40 style. Let us send you samples.

Complete catalog on request.

BERGER BROS. CO.

229 to 237 ARCH STREET PHILADELPHIA, PA.
Warerooms and Factory: 100 to 114 Broad Street 1

CHICAGO STEEL CORNICE BRAKES STANDARD OF THE WORLD



THE BEST BRAKE FOR ALL PURPOSES
Most Durable, Easiest Operated, Low in Price
Made in All Lengths and to Bend All Gauges of Metal. Over 15,000 in use

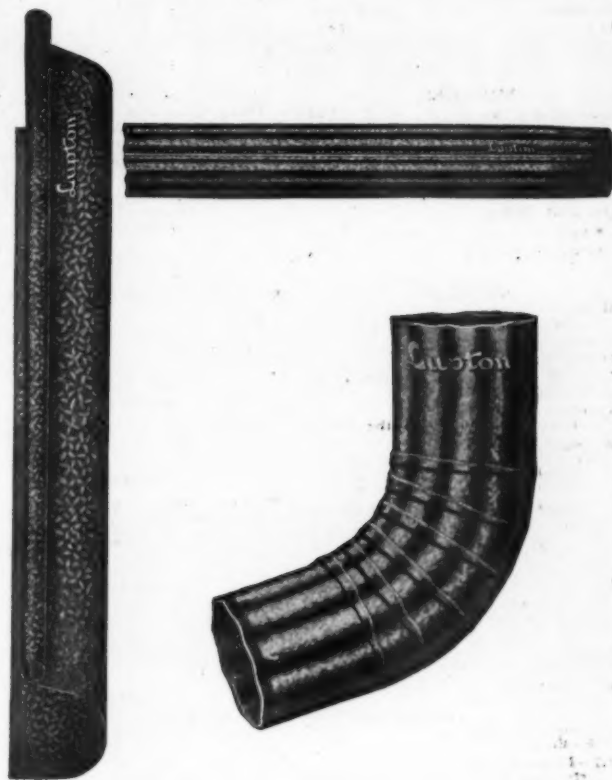
WRITE FOR PARTICULARS

DREIS & KRUMP MFG. CO., 2915 S. Halsted Street, CHICAGO



REQUIRES ONLY HEAT

CHICAGO SOLDER COMPANY
4201 Wrightwood Ave., CHICAGO, ILL.



Lupton

Elbows, Conductor Pipe,
Eaves Trough, etc.

CUT out the time lost in trying to do a good job with poor materials. Lupton's Elbows are machine made, in one piece; they never vary in size, girth or shape. The Conductor Pipe and Eaves Trough are so made that but minimum labor is needed to erect them properly.

A well-erected job speaks for itself. Get to know the Lupton line—ask for new catalogue and list prices. Made from Armco Iron, Toncan Metal, Horse Head Zinc, copper and galvanized steel.

Order from your jobber.
Tell us if he doesn't stock it.

David Lupton's Sons Company

Allegheny Avenue and Tulip Street

Philadelphia

Lupton

INVESTMENT VALUE

SNIPS, TINNERS'.

Clover Leaf	40 & 10%
National	40 & 10%
Star	50%
Milcor	Net

SQUARES.

Steel and Iron	Net
(Add for bluing, \$3.00 per doz. net)	
Mitre	"
Try	"
Try and Bevel	"
Try and Mitre	"
Fox's	per doz. \$6.00
Winterbottom's	10%

STAPLES.

Blind.	
Barbed	per lb. 21c @ 22c
Butter, Tub	" 16 @ 19c
Fence—	
Polished	per 100 lbs. \$5.45
Galvanized	" 6 15
Netting.	
Galvanized	per 100 lbs. \$6.54
Wrought.	
Wrought Staples, Hasps and	
Staples, Hasps, Hooks and	
Staples, and Hooks and	
Staples	50 & 10%
Extra heavy	35%

STONES.

Axe.	
Hindustan	per lb. New Nets
More Grite	" "
Washita	" "
Emery.	
No. 126	per doz. New Nets
Oil Mounted.	
Arkansas Hard	
No. 7	per doz. New Nets
Arkansas Soft.	" "
Washita No. 717	" "
Oil—Unmounted.	
Arkansas Hard	per lb. New Nets
Arkansas Soft.	" "
Lilly White	" "
Queer Creek	" "
Washita	" "
Seythe.	
Black Diamond	per gro. New Nets
Crescent	" "
Green Mountain	" "
LaMolle	" "
Extra Quinine	" "
bog	" "
Red End	" "

STOPS, BENCH.

No. 10 Morrill pat-	
tern	per doz. \$11.00
No. 11 Stearns pat-	
tern	" 10.00
No. 16 Smith pat-	
tern	" 7.00

STOPPERS, FLUE

Common	per doz. \$1.10
Gem, No. 1	" 1.10
Gem, flat, No. 3	" 1.00

STRETCHERS.

Carpet.	
Bullard's	per doz. \$3.90
Excelsior	" 5.25
Malleable Iron	" 70
Perfection	" 6.30
King	" 4.50

Wire.	
O. S. Elwood, No. 1	per doz. Nets
O. S. Elwood, No. 2	" "

SWIVELS

Malleable Iron	per lb. \$0.10
Wrought Steel	per gro. 4.50

TACKS.

Bill Posters' 6-oz. 25-lb. boxes	per lb
Upholsterers' 6-oz., 25-lb. boxes,	per lb. 15 1/4c

TAPES, MEASURING.

Asses' Skin	List & 40%
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THERMOMETERS.

Tin Case	per doz. 80c & \$1.25
Wood Backs	" 2.00 & 12.00
Glass	" 12.00

TIES.

Bale.	
Single Loop, carload	lots
Single Loop, less than	75 & 7%
car lots	70 & 15%

TRAPS.

Mouse and Rat.	Per Gross
Sure Catch Mouse Traps	\$2.50
Vim Mouse Traps	2.50
Short Stop Mouse Traps	2.40
Wood Choker Mouse	
Traps, 4 hole	11.25

Sure Catch Rat Traps	Per Doz. \$0.85
Dead Easy Rat Traps	0.90
Packed in One Bushel Band Stave	
Baskets.	

Sure Catch Mouse Traps	List per Bushel
(360 Traps)	\$6.25
Short Stop Mouse Traps	
(360 Traps)	6.00
Sure Catch Rat Traps (54	
Traps)	3.90
Short Stop Rat Traps (54	
Traps)	3.75

Assorted Mouse and Rat Traps.	List per Bushel.
Sure Catch (216 Mouse	
Traps and 26 Rat Traps)	\$5.65
Short Stop (216 Mouse	
Traps and 26 Rat Traps)	5.40

TROWELS.

Cement.	
Atkins No. 6	\$19.50
No. 9	25.50

TWINE.

White Cotton.	
Eureka, 4-ply	per lb. 30c
Jute.	
3-ply and 6-ply Bale Lots	22 1/2c

VALLEY.

Milcor	
Galv. formed or roll	.60%

VENTILATORS.

Standard	30 to 40%
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VISES.

No. 700 Hand.	
Inches	4 1/2 5 5 1/2
Doz.	\$11.15 13.00 14.85
No. 701.	In. 4 5 6
Doz.	\$11.15 13.00 16.70
No. 1. Genuine Wentworth.	
Noiseless Saw	per doz. 9.25
No. 3. Genuine Wentworth.	
Noiseless Saw	per doz. 12.75
No. 500. All Steel Folding	
Saw	per doz. 16.00

WASHERS.

Over 1/4 in. barrel lots	
per 100 lbs.	\$6.25
Iron and Steel.	
In. 5 1/2 6 3/4 7 1/2 8	7 2 1/2c

WEATHER STRIPS.

Metallic Stretched.	
1/4 in., per 100 ft.	\$1.80
1/2 in., per 100 ft.	2.20
Wood and Felt.	
1/4 in., per 100 ft.	\$1.55
1/2 in., per 100 ft.	1.55

WEIGHTS.

Hitching	per lb. Nets
Sash—f. o. b. Chicago	
Smaller lots, per ton	\$47.50

WHEEL BARROWS.

Common Wood Tray	\$3.75
Steel Tray, Competition	4.50
Steel leg, garden	6.00

WIRE.

Plain annealed wire, No. 8	
per 100 lbs.	\$3.70
Galvanized barb wire, per	
100 lbs.	4.10
Wire cloth—Black painted.	
12-mesh, per 100 sq. ft.	2.35
Cattle Wire—galvanized	
catch weight spool, per	
100 lbs.	4.60
Galvanized Hog Wire, 80 rod	
spool, per spool	3.95
Galvanized plain wire, No. 9.	
per 100 lbs.	4.15
Stave Pipe, per stone	1.10

WOOD FACES.

50% off list.

WRENCHES.

Coes Steel Handle.	6-in. 40-10%
" " "	8-in. 40-10%
" " "	10-in. 40-10%
" " "	12-in. 40-10%
Coes Knife-Handle.	6-in. 40-10%
" " "	8-in. 40-10%
" " "	10-in. 40-10%
" " "	12-in. 40-10%
Coes All Patterns	40-10%

WRINGERS.

No. 790, Guarantee	per doz. \$55.50
No. 770, Bicycle	" 52.50
No. 670, Domestic	" 48.50
No. 110, Brighton	" 43.50
No. 750, Guarantee	" 55.50
No. 740, Bicycle	" 52.50
No. 22, Pioneer	" 39.50
No. 2, Superb	" 29.00

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